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AN ASSOCIATION WITH A FUTURE*

HENRY F. VAUGHAN, D.P.H., Fellow A.P.H.A.
Commissioner of Health, Detroit, Mich.

OUR MEETINGS have served for the contribution of reports and papers upon important sanitary questions, rather than for voluble discourses. This abundant harvest, rich in the researches and studies of our numerous committees and individual members, has furnished food to many a hungry sanitarian seeking the views of those of wider experience. From the very beginnings of our organization fifty-four years ago, we have sought the "logically studied truths which are required for the basis and structure of true sanitary science and for the most effective methods and proceedings in public health administration."

At the Annual Meeting of this Association held three years ago in Cleveland, the members saw fit to accept the report of the Committee on Reorganization. Prior to that time valiant efforts had been made to increase our membership; to broaden our horizon; to so extend our field of activity as to embrace all who manifest an interest in public health. Dr. Rankin pictured an Association of half a million members with affiliated societies in every state and important metropolis.

All this is changed. We have returned to the organization of our founders. The Constitution of 1872 stated that "members shall be selected with special reference to their acknowledged interest in, or devotion to, sanitary studies and allied sciences, and to the practical applications of the same." Our present Constitution, while providing an associate membership for all persons interested in public health, states that "persons professionally engaged in public health work shall be eligible for election as active members."

This Association was conceived and organized by professional health workers, pioneers in the science of practical sanitation and health administration. Dr. Stephen Smith, at the organization meeting held at the New York Hotel, Friday evening, April 18, 1872, spoke of the necessity for a national organization limited in membership to the best of sanitary workers.

Our membership, although not infrequently poor in number, has been rich in quality and ever a potential force in the direction of improvements in health procedure. At Cincinnati in 1873 it was "the judgment of this Association that the establishment of a National Sanitary Bureau, with relations to the general government similar to those of the Bureaus of Agriculture and Education, is highly desirable as a means of promoting sanitary science and the protection of the public health." Six years later Congress created a National Board of Health which operated during the four years provided for it in the Act, and which paved the way for the strengthening of our National Health Service. This masterly work was

* Presidential Address, presented at the Second General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

accomplished not by numbers but by a small group of seriously minded professional health workers.

In our original Constitution, twenty-five members provided a quorum. At the Third Annual Meeting it was found that a quorum was not present, nor had there been twenty-five members in attendance at any previous meeting. It was therefore moved that the Association be dissolved and adjourn, *sine die*.

The members of the late Association present proceeded to form an organization to be called the "American Public Health Association," the new Constitution of which stated "that at the Annual Meeting nine members shall constitute a quorum for the election of officers, a change of Constitution, the election of members, and the appropriation of moneys." Even with so small a group of members, we must all admit that during its early years our Association made great advances.

Dr. Ravenel has admirably described our birth and our first fifty years of infancy; has called our attention to the contribution of our members; to the researches which have emanated from our committees; to the publication of our proceedings and of our JOURNAL; and to the various standard methods which have served so satisfactorily in this and other countries. We are richly endowed with the fruit that has been cultivated by our predecessors, and it should now be a pleasure and a privilege to the members of this Association to push forward with renewed vigor those principles so thoroughly understood by that handful of sanitarians who met in New York City at 301 Mott Street on April 18, 1872.

Our working members have always been individuals who are primarily engaged in public health service. The public has not infrequently knocked at our door and sought admittance which has never been denied. As Fellows and members of the American Public Health Association let us remember that we are all promoters of sanitary measures and procedures whether we occupy the coach assigned to the administrator, the laboratorian, the statistician, the engineer, the hygienist, the educator or the nurse. We are a society of sanitarians, each with a particular type of service for the public health, but all members of a common profession.

The Committee on Reorganization reporting at Cleveland made some very definite recommendations which it is my intention to discuss in some detail.

It was suggested that the tenure of office in the various sections should not be limited to one year, and that capable section secretaries should be reëlected as often as they would consent to serve, and further, that vice-chairmen should be selected with a view to later promotion to the chairmanship of the section.

Section organization should constitute a pillar of strength that supports the policy and various scientific standards evolved by the Association through its Governing Council, Executive Board, and general committees. It was never intended that section councils should function merely as an advisory body to pass on Fellowship applications or the Annual Meeting Program. The council should concern itself with the welfare of the section, its development, the extension of its membership, and the work of its committees. At the annual convention there should be at least two meetings of the section council and the chairmen should have the necessity for these meetings well in mind when they arrange their program.

A second recommendation of the Reorganization Committee states that the objectives of the Association should be the preparation, study, standardization and presentation of scientific public health procedures, the best method by which such knowledge can be given to the public, and the expression to the public of professional opinion in regard to such procedures. The forerunner of the Committee on Municipal Health Department Practice was the committee of twenty-four appointed in Philadelphia in 1874,

"to prepare schedules for the purpose of collecting information with regard to the present condition of public hygiene in the principal towns and cities of the United States, and the laws and regulations, state and municipal, relating to the same."

The report of the chairman of the committee read at Baltimore the following year provoked a discussion of, first, "what public necessities require that there shall be a central or state board of health in each state, and with what authority and duties should the state board of health be endowed" and second, "how shall local and state boards of health effectually supervise the registration of vital statistics, especially as respects causes of deaths, and investigate the sources of preventable diseases, so as best to promote the public welfare?"

It will be remembered that at that time only the following states could boast of state boards of health: Massachusetts (1869), Louisiana (1870), California (1870), Virginia (1872), Minnesota (1872), Michigan (1873), Maryland (1874), Georgia (1874), and Alabama (1875).

It is of further interest to know that this committee of twenty-four was not unlike many of our committees which have followed. A few enthusiastic, hard-working members undertook the preparation of an appraisal form or questionnaire. Such schedule was designed to apply to cities and towns of 5,000 inhabitants and upwards, of which there were approximately 325 in the United States. The desirability of extending the work to smaller towns and counties was suggested, an opportunity which we trust may soon be embraced by our Association.

The schedule of 50 years ago is a marked contrast to the appraisal form with which the health officers have been experimenting during the past 12 months. The emphasis and import attached to environment in those pioneer days of health administration are forcibly stressed in the sub-headings of the schedule:

1. Location, Population, and Climate
2. Topography and Geology
3. Water Supply
4. Drainage and Sewerage
5. Streets and Public Grounds
6. Habitations
7. Gas and Lighting
8. Garbage and Excreta
9. Markets
10. Slaughter Houses and Abattoirs
11. Manufactories and Trades
12. Public School Buildings
13. Hospitals and Public Charities
14. Police and Prisons
15. Fire Establishments, Alarms, Engines, etc.
16. Cemeteries and Burial
17. Public Health Laws and Regulations, Official and Municipal
18. Registration and Statistics of Disease
19. Quarantine

With the exception of the last two items, the entire group would all be assigned to the Section on Sanitation of the modern schedule, and even with this adjustment the majority of the questions would be omitted in their entirety as having very little direct influence upon the public health. It attempting to arrive at relative values for health work, the present committee has seen fit to assign to sanitation but 100 points of a total of 1,000 for all types of health work. We have graduated from that early stage of health department procedure where great emphasis was placed upon our environment as a potential factor in disease dissemination, and have become thoroughly entrenched in the realization that it is the individual himself rather than his surroundings that constitutes the most important single factor.

Millions of dollars and countless years of human effort have been wasted by the inauguration and continuation of disease restrictive methods which have proved valueless. One has only to glance over the titles of essays presented by the members of our Association of 50 years ago. Elaborate quarantine stations and expensive systems of fumigation have been tried and found wanting. Even towns have been burned and commerce has not infrequently suffered the unwarranted restrictions of the sanitarian. We are gradually disengaging ourselves from the shackles of tradition, freeing health de-

partments from the expensive relics of our worthy and learned ancestors who so courageously embarked in their search for truth and thus disclosed the beauties and wonders of a new profession.

We have decided that our Association shall be an organization of professional health workers. We now have 694 Fellows and 2,382 active members scattered throughout every section of the North American continent who are demanding a definite form of service from our Association, something more than the casual acquaintances made at the Annual Meeting, a more tangible advisory service than results from the perusal of our publication. We have proceeded admirably with the preparation, study and standardization of public health procedures. The committee, which under the able management of Professor C.-E. A. Winslow, has held four meetings during the past year, the last one extending over a period of three full days, has been increased to a membership of fifteen, eight of whom are Fellows actively serving as public health administrators. The committee cannot lose or overlook the viewpoint of the practical health officer.

Although the need of study will never vanish and our researches should be ever broader and more thorough, we have reached the point where we should seek the fulfillment of the second phase of our general objective, namely, the presentation of scientific public health procedures to the health workers and to the public at large.

This objective can be attained in one of many ways, or better still, by a judicial combination of several enterprises. Personal service and close contact will accomplish more than all other methods combined. Much printed matter is never read and the published page rarely carries the striking conviction of the author, a predominant factor in molding and establishing opinion. We must have active field workers, full- or part-time servants of our Association, trained in the fundamentals of our science, and fully and intimately versed in the latest researches and application of new developments. Such field officers must be prepared to survey our communities, to compare us with our neighbors and evaluate our accomplishments in terms of group judgment.

We are fortunate in having the services of two well-trained sanitarians, Dr. W. F. Walker, Field Director for the Committee on Municipal Health Department Practice, who stands prepared to assist in the Eastern States, and Dr. C. St. Clair Drake, Associate Director, who will extend the service elsewhere. It is hoped that other districts may be formed, and in certain remote sections, as, for example, the Pacific Coast States, and that there may develop a decentralization of the Association's Executive Office, with branches, state or regional offices, and conferences in centers where ready contact with our members may be maintained and service more quickly rendered.

A third recommendation of the Committee on Reorganization relates to the training of health workers:

"The Association should be prepared in so far as its interests and resources allow, to coöperate with the United States Public Health Service, Medical Corps of the United States Army and Navy, and other public health agencies in the training of field workers in the principles and practices applied in the field of public health."

Everyone is conscious of the fact that we have not the trained sanitarians for the positions that are actually developing in the public health field. Discouragement enshrouds those of us who have seen the United States Public Health Service, in coöperation with certain schools, endeavoring to stimulate interest in the education of sanitarians. Splendid courses have been arranged; masters of the profession have been the teachers; but the proper pupils, with very few exceptions, have been entirely wanting. Our Committee on Standardization of Public Health Training is making an exhaustive

study of the entire situation. As a professional society, one of our chief problems is the stimulation of the recruiting and training of professional workers, and the development of standards for training. We should make certain that a large supply of well-trained individuals is available.

The American Public Health Association is the oldest society in the public health field; it is the only professional society embracing all types of public health workers; and it is entirely independent of every other organization. As an association, we have very little to say to the public unless it be to tell them that it is essential to have trained workers, and possibly to correct erroneous impressions with regard to public health work. As individuals and as executives of our municipal, state and federal departments, we have a great deal to tell the public, much of which information can be provided by our Association. As the public is the recipient of the benefits derived, it is but just and proper that the public should have the privilege of extending us financial assistance. This Association can render an invaluable service to every municipal health department in this country; can stimulate interests in standard procedures which have proved their worth; and can eliminate the driftwood and hindering barnacles which have retarded the progress of the sanitarian.

A recent survey shows the astonishing fact that 39 of our large cities are spending, through their health departments, $354,000 annually for plumbing inspection, which sum if diverted to matters more strictly relating to health might enable considerable expansion in the maintenance of tuberculosis and venereal disease clinics, and in improving child health. The survey of the 100 largest cities in the United States made by the United States Public Health Service in collaboration with our committee, the survey of 86 cities by the American Child Health Association, coupled with the experimental application of the Appraisal Form, must ultimately convince all health officers that there is room for much improvement in our health organizations.

The Association is now in a position to assist and in its work should receive the financial aid of the local health department. It is my judgment that every city in the United States with a full-time health officer should make provision in its annual budget for a service fee to be paid to this Association. The rate to be paid in each case can be based either upon population or the amount of the local appropriation for preventive medical purposes. Individually, we are making our contributions; we have seen fit to raise the dues for Fellows to $10. Let us remember that the entire public is the recipient of the good which comes from our humble effort. I, therefore, urge upon you the formulation of a very definite program of service, something that will not only be appreciated but for which there will be unprecedented demand. We have a very salable service which should now be placed upon the market.

Finally, permit me to repeat that we are a body of professional health workers with two major concerns: first, the stimulation of the recruiting and training of sanitarians, and second, the development of standards of work and the improvement of technique. To attain our goal there must be created professional unity out of a rather miscellaneous and heterogeneous group of doctors, engineers, statisticians, nurses, and others. The possibilities of service as sanitarians in a common profession are immense. Let us lend every possible effort in this direction.

"Every man owes some of his time to the upbuilding of the profession to which he belongs."—*Theodore Roosevelt.*

THE COST OF PUBLIC HEALTH WORK*

ALLEN W. FREEMAN, Fellow A.P.H.A.

School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

THE HEALTH DEPARTMENTS of the 100 largest cities of the United States reported for 1923 gross expenditures of $28,104,954. This represents 87.4 cents per capita for the 32,155,096 people estimated by the Bureau of the Census to live in these cities. It represents a tax rate of 6 cents per hundred dollars, or six-tenths of one mill per dollar, on the reported assessed valuation of taxable property in these cities ($46,662,225,335). It represents, also, 1.77 cents for each dollar of the total expenditures ($1,588,142,292.70) by the cities under consideration for 1923. The owner of a house assessed at $5,000, therefore, under average conditions, paid for the support of his municipal health department $3.00 out of the total of approximately $170 contributed by him in one way or another to the support of his municipal government.

The total expenditures of health departments increased approximately 41 per cent in the 5 years 1919–1923, inclusive. Figures for this period are available for 74 of the 100 cities and the total annual expenditures for this group increased from $12,895,264 to $18,189,798. The per capita increase for the period was 30 per cent. The annual per capita expenditure for the group was, in cents, as follows:

1919	63.64
1920	74.18
1921	81.85
1922	80.84
1923	83.00

The total per capita expenditure varies markedly with cities of different sizes. The 12 cities of group I (population 500,000 and over) had an estimated population in 1923 of 17,340,168 and expended $15,534,759, or 89.58 cents per capita. The cities of group II (250,000 to 500,000 population) with a total population of 5,589,138, expended $5,724,123, or 102.42 cents per capita. The cities of group III (100,000 to 250,000 population) with a total population of 7,310,265, expended $5,556,551, or 76.01 cents per capita. The cities of group IV (70,000 to 100,000 population) with a total population of 1,915,525, expended $1,289,561, or 67.33 cents per capita.

There is the greatest possible diversity of practice in regard to the distribution of function and expenditures in city governments, and the figures for the gross expenditures of municipal health departments are not at all comparable as between individual cities, and are of only general significance as between the large groups of cities summarized above. In order to obtain any adequate basis of comparison between the health expenditures of the various cities, it has been necessary to separate the reported total expenditures into the items corresponding to the more important units of health service; to select the items according to a more or less arbitrary classification, including only the basic health services; and to re-combine these items into a standard budget for health service which may be used for comparative studies. There are, however, numerous combinations of services which could not be separated for a few cities and some

* Based on the Survey of 100 cities by the U. S. Public Health Service, made available through the courtesy of Surgeon General H. S. Cumming. Read at the Fifth General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 21, 1925.

services performed by voluntary agencies or by other departments of the city government are not reported in such form as to be capable of accurate analysis. Any such classification must, of course, be more or less arbitrary and must also be subjected to certain modifications to conform to the inherent limitations of the data used.

For the purposes of this study the following classifications have been separated out for the surveyed cities, and total and per capita expenditures tabulated for each of the 100 cities for these classes, the whole being summarized both by individual cities and by functions:

A—General Health Administration, including (B) Health Education
C—Vital Statistics
D—Prevention of Communicable Diseases
E—Prevention of Tuberculosis, including field services but excluding expenditures for hospitals and hospitalization
F—Prevention of Venereal Diseases, including field services but excluding expenditures for hospitals and hospitalization
G—Child (and Maternal) Hygiene, including nursing service
H and I—School Health Service, whether by health or educational authorities, including medical and nursing cost, but excluding cost of special classes and of physical education
J—Public Health Nursing, when carried as a separate item in the budget and not distributed between the various functions
K—Public Health Laboratory
L—Inspection of Milk
M—Inspection of Food other than Milk
N—General Sanitary Inspection

It must be recognized, of course, that in any such classification certain expenditures charged to health departments will not appear at all and certain expenditures of other departments such, for example, as those for school medical inspection by boards of education, will be included. The 11 categories included in this theoretical budget include those services which are commonly recognized as proper functions of the health department and which are or may be segregated in the financial statements of all or most of the departments studied.

Analyzing the expenditures of surveyed health departments in this manner, we find that the total expenditures in the 100 cities for these 11 services aggregate $18,782,075, or an average per capita cost of 58.44 cents per annum for the population served.

This per capita cost varies slightly between cities of different size. For group I it is 58.44 cents; for group II, 60.65 cents; for group III, 58.02 cents; and for group IV, 53.03 cents.

Speaking in round figures, administration and public health education in the average municipal health departments of the groups studied costs a little less than 6 cents per capita per annum. The cost of registering and tabulating vital statistics is 1.6 cents. The average city made a per capita expenditure as follows: for the control of communicable diseases, a little more than 8 cents; prevention of tuberculosis, excluding hospital service, 1.4 cents; control of venereal disease, excluding hospitalization, 1.4 cents; child hygiene, 5.8 cents; school inspection including expenditures for health service, whether by boards of education or boards of health, but not including physical education or special schools, 13.8 cents; the public health laboratory, 4.0 cents; inspection of milk, 3.8 cents; inspection of foods other than milk, 3.6 cents; and general sanitary inspection, 6.9 cents. The average per capita expense for public health nursing, 2.3 cents, thus computed, is misleading since only 10 of the 100 surveyed cities reported public health nursing as a separate item in the budget.

The per capita costs given above were computed from the total amounts reported as spent by the various cities for the purposes specified, using the total population for 1923 of the surveyed cities. They do not, therefore, represent the average actual cost of any service to those cities which actually performed the service in question. A more accurate computation may be had by adding the total expenditures in any class and divid-

TABLE I

AVERAGE PER CAPITA EXPENDITURES FOR ESSENTIAL HEALTH SERVICES, 100 CITIES
(Based on cities having expenditures in each class)

Function	Expenditure in Cents per Capita				
	Group I	Group II	Group III	Group IV	All Cities
Administration and Health Education	5.7	5.8	6.2	8.0	5.9
Vital Statistics	1.8	1.4	2.5	1.9	1.8
Communicable Disease Control	9.2	8.2	6.5	5.6	8.2
Tuberculosis Field Services	2.5	3.5	3.4	3.3	2.8
Venereal Disease Field Services	1.9	2.6	3.2	3.3	2.7
Maternal and Child Hygiene	7.7	4.7	6.7	5.6	7.0
School Health Service	11.3	16.0	17.9	17.0	13.9
Laboratory	4.4	3.9	3.5	3.5	4.1
Milk Inspection	5.4	6.5	4.5	3.3	5.6
Food Inspection	4.3	8.9	5.3	3.6	4.9
Sanitary Inspection	6.8	9.6	6.8	5.5	7.2
All Services	58.4	60.6	58.0	53.0	58.4

ing by the sum of the populations of the cities listing expenditures in this class. This computation has been made for each of the 11 functions for the cities of each group, and for the 100 surveyed cities as a whole. The results of this calculation are given in Table I. The figures as given by this method of computation do not differ greatly from those previously given in those items which are common to all the surveyed cities. In other items, however, the difference from the figures obtained by the simpler method is considerable.

The frequency distributions of the per capita expenditures for the 11 items combined and for each of the 11 items individually are given in tabular form in Tables II and III. As will be seen from Table II, total per capita expenditures range from 26 cents, the minimum, to $1.15, the maximum, the largest number of cities falling in the group which spends between 55 and 60 cents for essential health services. Less than half the cities fall in the group between 40 and 65 cents per capita, 19 cities spending less than 40 cents per capita per annum and 33 cities spending more than 65 cents per capita per annum. Fourteen cities spend less than 35 cents and 11 cities spend more than 80 cents.

The frequency distributions (Table III) of the various items are of considerable interest. The cost of administration varies from less than 1 cent to 16 cents, though nearly one-half the cities spend between 4 and 7 cents per capita for administration. The cost of registering and tabulating vital statistics is reasonably well standardized, varying from less than 1 cent to 6 cents per capita with a pronounced mode at 1 cent per capita.

Expenditures for control of communicable disease vary widely, varying from 1 cent in 8 cities to 25 cents in one city, about half the cities falling in the group between 3 cents and 7 cents per capita.

The cost of tuberculosis field service varies from less than 1 cent to 10 cents but is reasonably well standardized in the neighborhood of 3 cents per capita.

Venereal disease cost is somewhat more scattering but approximately half the

TABLE II

FREQUENCY DISTRIBUTION OF TOTAL EXPENDITURES FOR ELEVEN ESSENTIAL HEALTH SERVICES IN CENTS PER CAPITA
(100 Cities)

	Number of Cities Having per Capita Expenditures (Cents)																	
	Under 30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115
Group I	0	1	0	1	1	1	1	0	1	2	2	0	1	0	0	0	0	1
Group II	0	3	0	1	0	3	3	1	0	1	2	0	1	0	0	0	0	1
Group III	2	3	4	3	2	5	11	6	5	0	3	2	0	1	1	0	2	0
Group IV	3	2	1	3	3	1	0	2	2	4	0	0	1	0	0	0	0	0
All Cities	5	9	5	8	6	10	15	9	8	7	7	2	3	1	1	0	2	2

TABLE III

FREQUENCY DISTRIBUTION OF EXPENDITURES IN CENTS PER CAPITA FOR ELEVEN ESSENTIAL HEALTH SERVICES AND FOR PUBLIC HEALTH NURSING

(Including all cities reporting expenditure for given service).

Services	Number of Cities Having Expenditure of (Cents)—																																								
	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Adminis. and Health Ed.	1	6	6	11	15	11	15	9	7	4	5	3	2		4		1																								
Vit. Stat.	13	27	13	5	2	2	1																																		
Comm. Dis. (a)	0	8	9	12	7	13	10	8	5	6	5	5	2	3				1	1	1		1				1															
Tuber. (a)	5	7	6	11	5		1	2	1		1	1																													
Ven. Dis. (a)	12	16	10	9	9	4	1	2		1	2																														
Infant Hy.	4	6	10	4	7	3	3	7	4	2	3		1	2	2	1	2		1		1				2																
Sch. Hy.				4	1	4	4	9	2	3	2	3	5	8	3	5	5	3	3	3	5	1	3	3	3	1	5	2	2	1			1	1		1	1		1
Lab.	7	15	18	20	17	5	3	5	2	1	1																														
Milk Inspec.	1	16	14	9	10	10	1																																		
Food Inspec.	3	16	8	6	7	7	1	2	3	3	3	1					1																								
Sanitary Inspec.	3	5	8	5	10	7	10	12	8	5	5	4	2	1	5						1				1																
P. H. N. (b)		1	1	1	1	5	2	1	1	1	3	2	1	1	2		2	2	2	2		1	2	1		1		1	1				1	1		2	1				

(a) Hospitalization excluded

(b) Total cost, included usually in cost of other services.

cities spend between 1 cent and 3 cents for this service.

The cost of child hygiene is most irregular, varying from 1 cent to 20 cents per capita. Most of the cities which report expenditures under this classification, however, fall below 5 cents. The mode is at 2 cents.

School medical inspection, when done by the health department, costs from 3 to 26 cents, the mode being at 7 cents; and when done by the board of education, costs from 3 to 38 cents with the mode at 13 cents.

The total cost of public health nursing, including that given in connection with other services of this classification, varies from 1 cent to 36 cents per capita, the mode being at 5 cents, though the distribution is very scattering.

The cost of laboratory service is well standardized in the neighborhood of 3 cents per capita per annum with a minimum under 1 cent and a maximum of 10 cents per capita. The mode at 3 cents is well defined.

The cost of milk inspection varies from under 1 cent to 6 cents. The mode is at 1 cent. Inspection of foods other than milk varies from a minimum of under 1 cent in 3 cities to 16 cents in one city, the mode being at 1 cent per capita. The cost of general sanitary inspection varies widely from a minimum of under 1 cent to a maximum of 24 cents, with a very irregular distribution and a mode at 7 cents.

Much effort has been devoted to an attempt to analyze the cost of other services, such as hospitalization, care of the

TABLE IV

PER CAPITA COSTS FOR ELEVEN ESSENTIAL HEALTH SERVICES COMPUTED IN VARIOUS WAYS IN CENTS PER CAPITA PER ANNUM

Service	Method of Statement			
	Average Actual for 100 Cities	Average Actual for Cities Giving Stated Service	Modal or Most Usual Cost	Maximum by Any City
A—Administration	5.9	5.9	5.5	16.1
C—Vital Statistics	1.6	1.8	1.5	6.9
D—Communicable Disease	8.2	8.2	5.5	25.4
E—Tuberculosis	1.4	2.9	3.5	11.2
F—Venereal Disease	1.4	2.6	1.5	11.5
G—Infant Hygiene	5.4	7.0	2.5	24.4
H-I—School Hygiene	13.8	13.9	7.5	40.1
K—Laboratory	4.0	4.1	3.5	10.9
L—Milk Inspection	3.8	5.6	1.5	6.6
M—Food Inspection	3.6	5.1	1.5	16.8
N—Sanitary Inspection	7.0	7.2	7.5	24.1
J—Nursing(a)	2.3	...	...	...
Totals	58.4	64.3	41.5	194.0

(a) Where not distributed in cost of other services (10 cities).

indigent sick, housing and plumbing inspection and garbage removal, which are sometimes performed by health departments but more often by other agencies. The figures are so scattering, however, that it does not seem wise to attempt to present them at this time.

Summing up the cost of the basic health services (Table IV) we find that for the 11 classes enumerated above, the 100 cities of the 1924 survey expended 58.4 cents per capita; that had all cities performed all the 11 services, expending as much per capita as the average of those cities which did perform them, they would have spent 64.3 cents per capita; that had they expended the most usual amount for each service they would have expended only 41.5 cents per capita; while had they all expended for each service the maximum per capita spent by any city, the total per capita would have been $1.94, more than 3 times the present expenditure.

A FUTURE DEVELOPMENT IN INDUSTRIAL HYGIENE*

D. C. PARMENTER, M.D.

Industrial Clinic, Massachusetts General Hospital, Boston, Mass.

IT WILL BE POSSIBLE here only to outline one or two ideas with regard to industrial hygiene which seem to have been overlooked, particularly personal hygiene and the opportunities for it in industry which may, eventually, aid materially in the practice of real preventive medicine.

Hygiene and general attention to health in industry began at first with the care of injuries and accidents to employes. Later, the various workmen's compensation acts led to the covering of these risks by insurance companies. Special attention began to be paid to safety devices and protection from injury. It was to the employer's interest to prevent accidents and take care of his men. Medical departments grew up in factories and shops to do this work.

Coincident with this, it became evident that workmen were not only liable to injury but also to illness as the result of their work. Employers awoke to the fact that many poisonous substances were being used in industry. Industrial toxicology came to be an important part of industrial hygiene. The medical profession once interested in these problems of industry, began to see other phases of the situation. The general effects of fatigue, with its relation to production, accident frequency and the workman's health were studied.

Gradually legislation developed for the regulation of working hours and the control of poisons in much the same way as the compensation acts had developed. There still remains much to be accomplished. Methods of investigation have been standardized and industry as a whole is awake to the situation. Safety devices, ventilation, and lighting codes have been adopted to such an extent that there seems to be a somewhat limited field for medical advance in this direction. Apparently, we are fast approaching the limit in using legislation as a method for enforcing hygiene in industry.

With the increasing knowledge of the risks and hazards incident to industry

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came the realization that the human as well as the mechanical unit must be evaluated. Employers began to see the need for physical examination of their men. By this, the obviously unfit could be eliminated, workmen with contagious disease would not be employed, the men themselves could be kept from ill health, and, from a public health point of view, the various industrial groups could be much improved.

Industrial hygiene has developed gradually. Its present more noticeable activities have definitely outlined limits. Most of the tendency has been away from real medicine and into special technical fields. Few have realized that an opening has appeared for the study of the newer or preventive medicine. This implies a knowledge of incipient disease—and where is there a better opportunity to study incipient disease than in industry?

Nearly all that is possible has been done in many instances for the group industrial and public health hygiene, by legislation and by standardized procedures. We know fairly well how to prevent accidents, how to keep people from getting typhoid and smallpox, how to discover physical defectives and how to place them properly in industry. How are we going to prevent the breakdowns and the actual degenerative diseases? Renewed emphasis on personal hygiene should be the answer to this.

Heretofore, personal hygiene has been approached from the group standpoint, with no very definite attempt to prevent actual disease and lowered efficiency in the individual. Contrary to the general opinion, I feel very strongly that this can best be done by starting at the top with the executive and the key man in any industry, and making it an individual and personal matter. After all, these men are most important, not only to the industry, but to their employes. In the first place, if they can be convinced of the importance of personal hygiene through the route of physical examinations and careful follow-up, they are more certain to advocate this for their employes. Secondly, it is among these men that there occur most often the types of ailments about which we know relatively little. Thirdly, these men must be fit as well as organically sound.

We have too often been unable to prevent the executive, the man with large responsibilities, from breaking under strain and perhaps giving up his work temporarily or permanently. This usually dislocates any organization to a certain extent, and from the industrial point of view, should be prevented. It also loses for the community, usually, a valuable member who should be saved. Of the incipient stages of many diseases, such as arteriosclerosis, heart disease, kidney disease, we understand very little. In fact, the general subject of incipient disease is very much in its infancy. Oftentimes, there is no evidence of organic disturbance in the man who very shortly may become totally incapacitated. He may be an humble employe, but more often he is an executive or a key man with many responsibilities.

Physical examinations have been introduced in industry and they provide an excellent opportunity for approaching this subject of personal hygiene. We have seen, both in industry and in schools and colleges, that while physical examinations will show us organic defects, they are oftentimes of little value in detecting functional disturbances. It is the functional disturbances which careful attention to personal hygiene will go far toward obviating. To be really effective these examinations must be human and not merely statistical. There must be in each examination a more professional spirit of inquiry, as to what ails a man, even if he is organically sound. Fitness as well as soundness should be the aim of the physician. It is, after all, cold comfort to the man who has not slept and who cannot concentrate to tell him he is organically sound. He will be driven to the quack either within or without the profession who will of course find

something the matter. It may be said that this sort of medicine, either in industry or elsewhere, is not, strictly speaking, a public health problem, but it most assuredly is preventive medicine and there is no reason why personal and preventive medicine should not be practiced as well in industry as it should be in private practice.

Only careful investigation and accurate diagnosis can differentiate between the functional disturbances and the symptoms of organic disease. Functional disturbances have a very definite effect on individual efficiency, but just how much they can be identified with organic disease we do not know. Recognition of them, and the application of personal hygiene, has often made possible the prevention of a good deal of incapacitating illness. This is very definitely preventive medicine and emphasizes the need of paying attention to habits of living and working. What a man eats and drinks, how much he sleeps, what exercise or work he does and when, are often of as much importance as a particular heart murmur or a slightly raised blood pressure.

Physical examinations have told us much with regard to organic soundness. They have been used but little as yet to determine the degree of individual functional efficiency. This is, after all, of distinct interest and importance to industry. It has led us in a groping way to try to fit the man to the job, assuming that the functionally normal person works more efficiently in this way than if working at something for which he is not fitted. Various methods of attacking this problem have been tried—some successfully and some not. At the moment, it is sufficient to say that this lack of functional efficiency has been noted and found important enough to investigate.

From the physical examinations, which are an integral part of industrial hygiene, the medical profession has then an unusual opportunity for studying incipient diseases. It has the opportunity of practicing real preventive medicine through groups and on individuals over a period of time sufficient to check up results. It should be possible by the more intensive practice of personal hygiene to avoid a good many of the rather vague ailments and develop actual prevention.

As yet, we have gone only a short distance in this direction. Our attention has been diverted by the various problems of group and public health medicine which to a certain point have been cared for by legislation, by codes and rules for ventilation and safety in industry, by quarantine, inoculation, and the like, in the public health field. Personal hygiene is more nearly an individual matter, and it is doubtful if this can be legislated into the community any more than morals can be. It is a matter which requires personal contact between the physician and the patient. Physical examination in industry certainly affords an excellent opportunity for this personal contact and an excellent chance for the individual physician to investigate disturbances of function which are often more important than actual organic disease. Will it not be possible that in the future by gathering such data among the large industrial groups, we may eventually be able to prevent some of the more important degenerative diseases which seem often to be preceded by various little understood functional disturbances?

An opportunity is presented to the medical profession by industry which should indicate that, after all, industrial hygiene and general medicine are more closely related than most of us realize. Certainly, the physician practicing curative medicine and desiring to benefit the community as much as possible can find no better facilities for doing real preventive medicine than in industry. Industrial hygiene presents infinite possibilities for future development in this direction.

SANITARY CONTROL OF BEVERAGES*

H. J. KNAPP, M.D., FELLOW A.P.H.A., E. B. BUCHANAN, CH.E., ET AL.
Division of Health, Cleveland, Ohio

THE VALUE OF the non-alcoholic beverage industry has increased greatly within the past few years. Whether or not prohibition enactment has been a factor in the stimulation of its growth, is somewhat of a question. At any rate, conditions are such that it is necessary to devote special regulatory measures to the control of a product which is used so widely by both the adult and child population.

A conservative estimate of the value of these products which were sold in the city of Cleveland during the year 1924 would be in the neighborhood of eight and one-half millions of dollars. In other words, the amount of eight and one-half dollars per capita was expended for non-alcoholic beverages. This per capita expenditure would be sufficient for a two months' milk supply, assuming that the individual consumes one quart daily. These figures attain greater significance if one considers that the average daily per capita milk consumption in many communities is less than one pint daily.

Although the non-alcoholic beverage does not occupy an important position in the human dietary and, in fact, might well be displaced from it, nevertheless, since it is largely consumed by that portion of the age group which is so susceptible to infection by food means, especial sanitary safeguards should be thrown around the industry itself. In the sanitary control of these foods therefore, it is necessary that regulation begin with investigation of the ingredients which are to be incorporated into the product, and should be adequate to insure proper sanitary conditions attendant upon its manufacture, and the proper quality of the finished article.

The conventional method of control for products of this sort has been largely technical, but often the more important health phases of the problem have been either overlooked or ignored. In the past, food officials have been largely concerned with such matters as proper label declaration, color identification, sugar content, etc. Vigilance in technical enforcement is commendable and should not be discouraged since, in many instances, the enforcement of technical standards insures the fulfilment of health specifications. In beverage regulation, however, sanitary enforcement should be supplemented by the assistance of the bacteriologist and chemist in the control of not only the process of manufacture but also of the product itself. Our experience in Cleveland has demonstrated that satisfactory beverage control can only be attained by vigorous field inspection, supplemented by both bacteriological and chemical examinations of the finished product and of the product at certain appropriate stages in the manufacturing procedure.

The present program for beverage control in Cleveland has been in operation during the past 3 years. Previous to this plan it had been our custom to make fairly regular sanitary inspections of all plants during the period of the summer season, which was the time of the greatest production. At regular intervals samples were submitted to the laboratory for chemical analysis and label inspection.

* Read before the Food and Drugs Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 22, 1925.

Sanitary inspection as carried out covered all phases of the Sanitary Code applicable to food manufacturing establishments, such as cleanliness of the building itself, cleanliness of utensils and manufacturing equipment, washing facilities, location of toilets and syrup rooms, and screening.

Chemical analysis covered such phases as identification of artificial colors whether certified or not, presence or absence of saccharin, sugar content, etc. At the same time examination and censorship of labeling was carried out so that correct label declarations were assured.

In view of the fact that with the passage of our present Sanitary Code a section was incorporated which specified that all bottled beverages be free from microorganisms, it became necessary to supplement our then existing program of enforcement with a scheme for the routine bacteriological investigation of these products. Accordingly inspectors were instructed to submit at regular intervals samples from all bottling plants for bacteriological examination.

The results of these first bacteriological examinations revealed interesting and instructive facts, such as bacterial counts running into thousands per c.c., and a large percentage of all samples indicating Colon bacillus group pollution. From such findings it was evident that our scheme of enforcement was ineffective, to say the least, since products which were to be consumed largely by our child population did not even meet the accepted health standards for potable water. It was also evident that a need for the education of bottlers in the principles of plant hygiene existed, since materials primarily sterile were being fabricated into finished products which in many instances were grossly polluted.

Another section of our code specified that all containers for beverages be cleaned after each separate use by washing for not less than 10 minutes in an alkali solution of 3 per cent at a temperature of 125° F., followed by a rinse of clean potable water. Inspectors were accordingly instructed to enforce the observance of this particular section of the code. Enforcement of these provisions required the installation of accurate thermometers upon bottle washing machines and required constant checking by our technical force as to the alkali content.

RESULTS OF VARIED METHODS OF WASHING

	Average Count	Colon Group
Approved washer—3% alkali, 15 minutes, 125°	40	0
Approved washer — .06% alkali, 15 minutes, 120°	3,160	Not Determined
Unapproved type of washer—high alkali, low time, low temperature, without regular rinsing	500	0
Unapproved type of washer—high alkali, low time, high temperature, without regular rinsing	365	0
Unapproved type of washer—high alkali, high temperature, low time, regular rinsing	5,870	Present in 1/100 c.c.

A program of vigorous prosecutions for violations as to alkali content of soaker water and temperature variations failed to materially improve the bacteriological quality of products themselves. It was therefore evident that factors other than alkali content and temperature maintenance were necessary to insure finished products which would be above sanitary reproach. Since alkali content and adequate temperature level are not in themselves sufficient to insure proper bottle sterilization it was evident that time and rinsing factors must be considered.

James P. Kilcourse pointed out in his paper delivered at the Cleveland meeting that a caustic soda wash of a strength of at least 1 per cent maintained at a temperature of 120° F. for a period of at least 10 minutes, followed by thorough rinsing by spiral stream from an approved water supply, would be satisfactory for bottle sterilization. Our field investigations have partially confirmed his findings, although our experience would seem to indicate the desirability of an alkali solution of 3 per cent for washing, with proper temperature and time interval, plus proper rinsing.

Tests carried on by us indicated that washing in a solution of high alkali content, that is, above 3 per cent, at a tem-

perature below 120° F. for a period of time less than 10 minutes was insufficient for proper sterilization. On the other hand, washing in alkali solutions of less than 1 per cent with a 10-minute time exposure at temperatures of 120° F. is also inadequate for proper sterilization, even though a proper rinsing procedure be used. Other tests were made in which solutions of a high alkali content were used at high temperatures plus adequate rinsing measures, and yet high bacterial counts, and in some instances, Colon group pollutions were encountered.

As to the proper rinsing procedures which we have found to be necessary for proper sterilization, it is only necessary to state that rinsing water must be of accepted standard; must be running; and must be applied in such a manner that bottles are thoroughly rinsed by the use of sprays.

Our experience has also demonstrated that many of the soakers which are now used in the bottling industry are entirely inadequate for proper results. Many are in use which do not provide for the sufficient minimum time interval of exposure of 10 minutes, and some do not provide for the constant maintenance of fresh running rinse water.

Certain other procedures and measures have been proposed which seemingly would safeguard products of this nature. Certain workers have demonstrated that carbon dioxide under sufficient pressure is capable of producing partial sterilization in products which are grossly contaminated. Our experience has confirmed these findings, but high pressures plus adequate storage time are necessary to attain such results. Another objection is that the containers which are commonly used, are incapable of withstanding high pressure and their use under such conditions would be productive of danger to both producer and consumer. Furthermore, the storage of carbonated products except those which are highly charged must be for too great a period of time. During the period of heavy demand, all plants are working at full capacity and in few instances could a single day's supply be stored for a 24-hour period. Therefore high carbonation and storage do not remedy faultily manufactured and unsterile beverages.

Pasteurization has been suggested as a desirable additional safeguard; but manufacturers claim that such a practice destroys flavor and that the heating of charged glass containers introduces a great hazard to the workers engaged in bottling operations. In our opinion, pasteurization is entirely unnecessary and its requirement would be apt to encourage laxity in other stages of the manufacturing process.

As a result of past experience in bottle beverage control, we have developed a system which operates as follows:

The inspector who is assigned to bottling plant inspection devotes practically his entire time to this problem. He has had the benefit of several years' experience in practical food laboratory analysis, in addition to practical experience in sanitary food inspection. Sanitary inspections are made at frequent intervals throughout the entire year but with greater frequency during the season of greatest production.

All bottlers are required to obtain the ordinary food handlers' license, which must be renewed at the beginning of every year. These licenses are granted only after appropriate inspection, and they insure that the premises as occupied are in compliance with the Sanitary Code. If there is any question as to violations of the Sanitary Code, licenses are withheld pending compliance with written orders. The inspector in making his rounds takes cognizance of any apparent violations of the code and issues the appropriate written orders therefor. Especial attention is devoted to bottle washing operations, such as alkali content, temperature of washing solution, time required for passage of bottles through the cleaning liquid and finally the adequacy of rinsing operations.

At certain regular intervals samples from all producers are submitted to the laboratory for both bacteriological and chemical examination. In the event of high bacterial counts the inspector pays special attention to bottle cleansing operations and at frequent intervals collects samples of the alkali cleaning solutions for chemical examination. In the event of alkali strength falling below 3 per cent, appropriate action is taken either in the form of written orders or prosecution. Supplemental to this action, from time to time the inspector, assisted by one of our bacteriologists, makes bottle washing efficiency tests in a manner similar to those made in milk plants. In the event of products showing frequent high counts, that is, above 100 colonies per c.c. or Colon group pollutions, or both, legal prosecution is instituted.

It might be mentioned that during the past year several cases based upon bacterial counts have carried into the courts with a successful outcome.

In the opinion of our department, beverages of this character should not show counts in excess of 100 per c.c. and there should be an entire absence of Colon group pollution. Bottle washing efficiency tests conducted in the field have indicated to us that the use of at least a 3 per cent alkali solution, maintained at a temperature of 125° F. for at least 10 minutes, followed by rinsing in potable water insures adequate bottle sterilization. An analysis of bacteriological findings made upon samples submitted during the past year reveals the interesting and instructive fact that of all samples taken from plants in which satisfactory soakers are in operation, only $1\,^{3}/_{10}$ per cent showed evidence of Colon group pollution, while of all samples taken from plants in which at the present time soakers are unsatisfactory in some respects, $17\,^{3}/_{10}$ per cent showed evidence of pollution.

CONCLUSION

Satisfactory nonalcoholic beverages may be prepared in such a manner that the finished product does not contain in excess of 100 bacterial colonies per c.c. and is free from Colon group pollutions. In order that products of this nature may attain the accepted standards for potable water, the health official must supplement his regular inspectional program with field and laboratory examinations which are capable of controlling the sanitary practices of the entire manufacturing process. Bottle sterilization, one of the prime essentials, may be attained only by the use of soakers which provide for alkali solutions of proper strength and temperature level and for appropriate time passage, followed by suitable rinsing in running potable water.

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SELF-PURIFICATION OF OYSTERS DURING HIBERNATION*

STEPHEN DeM. GAGE AND FREDERIC P. GORHAM, FELLOWS A.P.H.A.
Sanitary Engineer State Board of Health; and Professor of Bacteriology, Brown University, Providence, R. I.

HIBERNATION may be defined as the slowing down of biological activity as a result of a reduction of temperature. In the vegetable kingdom the vital processes are completely dormant during cold weather. Certain of the warm blooded animals as the bear, the hedgehog and the bat become inactive during the winter. Among the cold-blooded animals nearly all of the northern amphibia and reptilia hibernate. However, the vital processes in all cases never entirely cease during hibernation.

Hibernation of oysters appears to have been discovered about 1910 independently by a number of sanitary workers who observed that the bacterial content in winter oysters from polluted areas was abnormally low. In papers read at a meeting of the Oyster Growers and Dealers Association of North America in May, 1911, both Herbert D. Pease and F. P. Gorham discussed this apparent bacterial phenomenon and attributed it to the fact that the oysters were probably in a state of hibernation. The results of consecutive bacterial examinations of oysters from selected polluted areas in Narragansett Bay during the winter and spring of 1910–1911, together with data as to temperatures and bacterial quality of the overlying waters were presented in a paper by Gorham read before the Laboratory Section of this Association in December, 1911.[1] These data may be briefly summarized as follows:

Of 25 samples collected in December, January, February, March, and the first part of April, when the water temperature was below 48° F., 15 scored 5 or less, 9 others scored 50 or under, and 1 sample scored 140.

Of 6 samples collected from the same four beds in the latter part of April and in May, when the water temperature was above 50° F., 4 scored 410 and 2 scored 500.

SELF-PURIFICATION BY HIBERNATION

These initial observations of the lowered bacterial content of oysters during cold weather and the deduction that they were correlated with low temperature led to a long series of laboratory and field studies. Round[2] made and published his classic research on the bacteriology and biology of the oyster. Other investigators studied the effect of changes of temperature and other environmental conditions on the oyster itself and on its bacterial content. In these various investigations, it was demonstrated that as the temperature of the water approaches the freezing point, the shells of the oyster tend to close and remain closed for the greater part of the time. The lower the temperature, the longer the periods during which the shells remain closed. It is evident that this is not due to a " rigor frigoris " as the control of the adductor muscle is as active at 34° F. as it is at normal summer temperatures. Even at a temperature close above freezing the shells may open for short periods at long intervals.

* Read at the Joint Session on Oyster Sanitation of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 20, 1925.

The rapidity of the motion of the cilia on the mantle and gills of the oyster is in direct relation to the temperature. As the temperature decreases the rate at which these cilia move is retarded and as the temperature approaches 32° F. ciliary movement tends to cease entirely. As is well known, feeding and respiration in the oyster are brought about through circulation of water through the body and shell cavities as a result of this ciliary motion. At normal summer temperatures as much as 7 or 8 gallons of water pass through the oyster each day. With the reduction of ciliary movement through lowering of temperature, circulation of water is also reduced until at a temperature of 46° F. the movements of the cilia have become so feeble that no water circulation can be demonstrated.

It may be of interest at this point to mention the investigations by Dr. Galstoff at the Bureau of Fisheries Laboratory at Woods Hole during the past summer and described in part in a paper read before the National Association of Fisheries Commissioners on October 1, 1925. In an elaborate series of carefully controlled experiments with specially devised apparatus to record the water temperatures and the opening and closing of the shell, and to measure the volume of water circulated, the unpublished observations of Gorham and his assistants on the relation of temperature to the biological activity of the oyster as described in the preceding paragraph have been entirely confirmed.

The fact that the process of respiration in the oyster is a function of the temperature was demonstrated by Mitchell in 1913.[3] In his studies it was shown that during cold weather when the shells remain closed for days at a time, the oyster takes no oxygen from the water, but derives whatever oxygen may be needed to satisfy its greatly reduced vital processes from the abundant supply of glycogen which it has stored up during the active feeding season.[4]

It must be borne in mind that the oyster has a highly organized nervous system and reacts quickly to even minor changes in environmental conditions. Relatively small stimuli such as changes in light intensity, temperature, salinity, etc., have been observed to cause the oyster to close its shell immediately when feeding and in some cases to open temporarily during the hibernation period. All observations indicate that sensitiveness to external stimulus is more marked when the water is cold than when it is warm.

With these facts in mind, it becomes possible to explain the elimination of colon bacilli from the shell liquor during the period of hibernation. Under normal summer conditions when the shell is open and the cilia are in active motion, several gallons of water are being filtered every 24 hours. *B. coli* and other bacteria in the water are concentrated in the body and upon the gills and incidentally in the shell liquor. In polluted waters the *B. coli* content of the shell liquor is almost always many times higher than that of the water in which the oyster is growing. With the advent of cold weather the shell closes and concentration of bacteria ceases. Circulation through the body continues slowly, for a time at least, during which the bacteria in the shell liquor are carried into the digestive canal. Eventually the oyster opens either through lack of oxygen or for purposes of defecation, but as there is little or no ciliary movement, no water is filtered and there is no new concentration of bacteria within the shell, while most of those previously concentrated are discharged with the feces. The slight opening of the shell and the elimination of feces at intervals has been abundantly demonstrated in laboratory experiments. It has also been demonstrated by laboratory experiments that the elimination of *B. coli* proceeds much more rapidly at temperatures between 40° and 50° F. than it does at lower temperatures.

These seem to be the biological facts which explain the observed self-purification of oysters during hibernation. They

are based largely on the records of studies made in the Biological Laboratories at Brown University. There appears to be little or no available experimental evidence to show whether this self-purification actually occurs in every oyster or whether the degree of self-purification is the same in different oysters of the same lot or in oysters grown in different localities. These points will be discussed later.

SANITARY CONTROL OF OYSTER GROUNDS

Since 1910 the Commissioners of Shellfisheries of Rhode Island have examined oyster beds and have issued sanitary certificates permitting the taking of oysters from such beds as were found to be free from evidence of pollution. During the earlier years all beds from which it was desired to take oysters were examined individually. This method of sanitary control involved a large amount of laboratory and field work, and it was believed that a simpler and more economic system could be worked out. In 1914, therefore, a conference was held by the Commissioners of Shellfisheries and their sanitary adviser, Professor Gorham, with representatives of the U. S. Bureau of Fisheries and the U. S. Bureau of Chemistry. At this meeting the data showing the effect of hibernation on the bacterial content of oysters was discussed. The following system of sanitary supervision was then worked out and approved. Under this system the oyster beds in Narragansett Bay were divided into three classes.

Class A contains all beds which are remote from pollution by sewage from public and private sewers, and which bacterial examinations of oysters and overlying waters repeatedly showed to be free from evidences of pollution. Sanitary certificates for the taking of oysters from beds in this class are granted each year with only occasional sanitary surveys and bacterial examinations, made for the purpose of checking up.

Class C includes oyster growing areas which are located within direct zone of pollution travel from the outfall of public and private sewers. Most of the sewage polluting these areas is disinfected either with liquid chlorine or hypo before being discharged. During the winter, also, hibernation causes oysters from these areas to have relatively low scores. Nevertheless, on the ground of cleanliness and common decency as well as for other sanitary reasons, these areas are closed as a source of oysters for food throughout the year. As these areas include some of the best oyster growing ground in Rhode Island, their use for seed and propagation is permitted, all oysters therefrom being required to be transplanted to Class A waters for self-purification before being used as food.

Class B areas include oyster ground located well outside the direct zone of pollution travel from public and private sewers, but which under certain conditions of wind and tide may show bacterial evidence of minor pollution. Each of the areas in this class is handled as a separate sanitary unit for investigation each fall. After hibernation has started and bacterial examinations have shown oysters on all test beds to show low *B. coli* scores, a limited sanitary certificate permitting the taking of oysters during cold weather may be issued.

There seems to have been a misunderstanding in certain quarters about the application of the hibernation theory to the sanitary control. Although it is well known to the sanitary authorities of the northern states that low scores are commonly obtained in winter on oysters collected from badly polluted areas, it has never been the practice to sanction the taking of oysters for food from dangerously polluted areas, even in the winter when it was believed that all scores would be low.

EVIDENCE OF PURIFICATION DURING HIBERNATION

During the deliberations of the committee appointed by the Surgeon General of the U. S. Public Health Service to formulate a system of unified sanitary

control of the oyster industry, various features of the system in use in Rhode Island were given careful consideration. At that time, in addition to Gorham's original publication, supplementary data from oyster examinations made by Gage were submitted to illustrate the effect of hibernation on the bacterial content of oysters. These supplementary data may be summarized as follows:

In the routine examinations of oyster beds in Narragansett Bay during 1917, 1918, and 1919, samples were collected from Class B areas in the fall season before and after the temperature drop in the sea water which corresponds with the beginning of oyster hibernation. After 1919, examinations were deferred until after the temperature drop had occurred, and the results are therefore of no value for purposes of comparison. The records of analyses of 141 samples of oysters collected in 1917, 1918, and 1919 show 64 sets of examinations in which a comparison of high and low temperature scores may be made. Allowing for the usual minor fluctuations common to bacterial analysis of all natural products, 44 of these comparative sets of observations showed low scores both before and after the change in temperature. In only 2 cases was a score above 50 obtained after the temperature of the water had dropped to 50° F., in one of these the score being higher after the hibernation period had started and in the other a decrease in score from 500 to 140 followed the drop in temperature. In the other 18 sets of comparisons the scores on 20 samples collected at temperatures of 60° to 70° F. were 500 (3 samples), 410 (3 samples), 320 (2 samples), 140 (5 samples), 50 (3 samples), while the scores on 20 samples collected at temperatures of 45° to 52° F. from the same areas were 50 (1 sample), 41 (2 samples), 32 (1 sample), 23 (1 sample), 5 (4 samples), 4 (4 samples), 3 (3 samples, 2 (2 samples), and 1 (1 sample). In certain instances in which a set of observations included 3 or more consecutive samples, a continuous drop in score coincided with a continuous drop in temperature. As for example in the series, temperature 73–65–50, score 140–23–4.

After consideration of the evidence at hand, certain members of the committee raised the question as to the consistency of self-purification and as to whether this self-purification should be recognized as sufficient to permit the use in winter of oysters from doubtful areas which would otherwise have to be barred out as direct sources of shellfish food. While the evidence available was insufficient to answer these questions definitely, a large amount of unpublished data has been accumulated in the files of northern laboratories during the past 15 years which might have an important bearing on this and on other phases of the shellfish problem. The writers have, therefore, undertaken to compile and correlate the data which have been accumulated during many years of experimental and routine work with oysters in Rhode Island. The conclusions to be drawn from these various researches into the biology and bacteriology of the oyster in so far as they bear on the question of hibernation have been presented in a previous chapter. The classification and analysis of the results of routine examinations of oysters and samples of water from the various oyster growing areas, and the correlation of these with other chemical, bacteriological and engineering data relating to pollution travel involve the tabulation and study of a mass of figures which will require a considerable time to complete. Although definite conclusions and discussion of related points must be deferred until the statistical study is further advanced, certain features in the results which we have already studied stand out so prominently that they should be mentioned at this time.

In attempting to check up on the constancy of self-purification during hibernation, for purposes of comparison we divided the oyster beds in Narragansett

Bay into 15 geographical groups, and tabulated the *B. coli* scores of all oysters in each group in accordance with the temperature of the water at the time the samples were collected. The results of this tabulation which includes over 1,800 samples adds confirmatory evidence to the self-purification of oysters by hibernation. The collective scores of oysters obtained from each of these 15 areas were lower in winter than in summer. Judging from these figures it would also appear that this self-purification is relative rather than absolute since a greater or less proportion of high scores was obtained during the winter on oysters from all of these areas.

The question as to the constancy and consistency of this self-purification cannot be answered fairly from the results of this tabulation, however, as the one big outstanding fact is the erraticism and inconsistency of all the scores both summer and winter. In a strikingly large proportion of this analytical data the scores are entirely at variance with the known facts as to the purity or pollution of the overlying waters.

On four areas which are far removed from all possible sources of pollution, from 20 to 40 per cent of the oyster samples collected in summer showed scores ranging from 140 to 500+, while on not one of these areas were as many as 50 per cent of the scores as low as 5. On the other hand, on two areas which are subject to immediate and direct sewage pollution, 11 and 20 per cent of the samples respectively scored as low as 5 and only 24 and 45 per cent respectively of the samples scored over 50. The number of samples included in each of these two groups of areas of widely differing pollution is sufficiently large, 471 and 177 respectively, to be fairly representative. Summer results only are given, thus eliminating any effect of hibernation.

In a group of 8 Class B areas, which on other evidence would be declared subject to only very minor probability of pollution, the proportion of samples scoring 140 to 500+ varied from 22 per cent to 62 per cent. Seven of these 8 Class B areas showed a larger proportion of high scores in summer than did one of the dangerously polluted areas. On numerous occasions all samples collected on one day yielded scores of 500+, while other samples collected from the same test beds a day or two later would score very low.

In any large series of biological data a certain small proportion of inconsistent results may be expected. The proportion of inconsistent or abnormal results in our tabulations is so large, however, that it cannot be explained as normal biological variation, nor can we explain these results individually or collectively on the basis of any other known facts. While they stand unexplained, the accuracy of our present methods of examination and scoring of oysters as a measure of probable hygienic safety may be legitimately questioned. If even a small proportion of oysters from unpolluted sources is found to score high, we are certainly not justified in establishing any definite limiting score for market oysters.

It is quite possible that certain unknown biological factors in the life of the oyster may at times affect the numbers and types of bacteria which are present on or in the body of the shell liquor. It is also possible that certain oysters may become carriers of *B. coli* or similar bacteria. These are questions which must be answered by extended and careful researches into all phases of the bacteriology of the life history of the oyster, before we can hope to interpret the sanitary analysis of market oysters with any degree of accuracy and fairness.

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MENTAL HYGIENE AND ITS RELATION TO PUBLIC HEALTH*

CHARLES P. EMERSON, M.D.

Dean and Professor of Medicine, Indiana University School of Medicine, Indianapolis, Ind., President The National Committee for Mental Hygiene, New York City

THE MENTAL HYGIENE movement would seem to be very popular. So have been all the various health movements. In this very popularity, however, lies its greatest danger, since it cannot but tempt well meaning but inadequately trained enthusiasts to exploit attractive but by no means as yet proven theories, and may encourage hopes impossible of realization. The result of this tends rather to discredit our cause. How to minimize this danger should be one of the serious objectives of our organization and is the subject of this paper.

By mental hygiene we mean that department of medical knowledge which concerns the preservation of mental health. Psychiatry interests itself in the diagnosis and treatment of the mentally sick person; but mental hygiene tries to conserve whatever mental health there may be in either the well or the sick person. Psychiatry differs from hygiene in that it should always be an individual matter, a question for an expert and his patient. Hygiene, on the other hand, develops certain general propositions concerning ways of living, working, and thinking — general propositions which have a general application. These the public can understand, and each individual may, if he wishes, apply them in his own life. Finally, hygiene is a later, a higher, even a final product of the branch of medicine to which it belongs. Diagnosis and treatment are much earlier products of its development. Of course this statement demands explanation. The bacteriologist and the sanitary engineer have, without the aid of any medical training, eliminated several diseases but they have done this by modifying the environment in which we live.

We judge a man or a movement by the highest, the most important, the most difficult thing he or it proposes to do, and in the case of hygiene this is to eliminate disease by modifying the individual. Hygiene which attempts the reëducation of the public; which suggests modifications in our habits of life and in the laws which regulate families and communities; which proposes control even of the most important institutions, such as marriage; hygiene in this true sense can be safe only in the hands of those who have had very intimate experience in treating the disease which they now propose to prevent.

While man has developed many favorite systems for the prevention of insanity, including charms, incantations, madstones and drugs, yet in modern times the first serious effort in mental hygiene was that of Pinel, who in the last decade of the 18th century, and at the risk of his own life and liberty, reformed the two great hospitals of Paris by striking off the chains from the insane and treating them as patients rather than as criminals. Certainly the very manner in which those insane had been cared for, herded like cattle, loaded with chains, prodded by sticks and even stoned by boys who by paying the guards a trifle might enjoy the fun of tormenting these unfortunates in

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order to see them rave, would tend to make their mental condition worse. It would make even a sane man crazy.

Pinel's reform was a measure of mental hygiene, since it was a general measure which tended to conserve whatever mental health each of those inmates might still possess. The actual treatment of the mental conditions which had brought them there is a quite different matter; yet certainly no treatment could be of much benefit if the general régime under which the patients were living tended to increase the severity of their diseases.

The asylum conditions which Pinel reformed may suggest the Dark Ages, but it is a regrettable fact that even today, although in a much lesser degree, many institutions for the insane are so administered that the very stay in them has the tendency to make a doubtful case definite, a mild case severe, and a curable case, incurable. Unfortunately it is still true that our great hospitals for the insane offer the best field for mental hygiene.

But that which now interests us, and especially in view of the subject of this paper, is that Pinel, the great specialist in psychiatry, was first and last a physician, one of the best of his day, and that throughout his life he taught his students psychiatry by teaching them, first of all, clinical medicine. It is interesting to note that although the promotions which marked his successful career in the University of Paris gave him opportunity to arrange his work as he saw fit, yet, contrary to the usual custom then and now, he never turned over to a subordinate that course in general medicine which he considered the very foundation of psychiatry.

Since the time of Pinel it has been clearly recognized that psychiatry must rest firmly on the foundation of general medicine of which it is a part. True, it owes much of its content and many of its methods of diagnosis and therapy to psychology, and like all true specialties it has developed many others for itself; yet the actual application of this knowledge and of these methods is the problem of the psychiatrist and general medical practitioner; not of the psychologist. There is, indeed, no essential difference between the mental and physical diseases. They may differ superficially, but fundamentally they are one and the same. Even superficially all physical diseases have an important mental side which we should not neglect, and certainly all mental diseases are more or less physical diseases. This essential identity is illustrated by the common observation that the physical disease of the parent so often explains the mental defects in the child.

We should not be deceived by the term "insanity." There is no such disease. It is not a medical but a legal term which indicates that the mental condition of the patient, whatever his disease may be, is such that for the safety of society and of himself it is desirable to restrain him. Just as some cases of typhoid fever are severe and some so mild that the patient scarcely knows he is sick, so of two men with exactly the same mental disease the one may be a raving maniac and the other "merely nervous." That is, it is merely a question of degree.

The factors which determine the severity of a case are partly emotional, partly physical, and in most cases a combination of the two. In general paresis, that best illustration of progressive mental deterioration, the factors are almost entirely physical. A mild case may become severe as a result of worry and humiliation. Even the colors of the walls have their influences. But bad physical conditions are quite as important, especially fatigue, poor food, and almost any disease which tends to reduce physical efficiency. For this reason mental hygiene interests itself greatly in the physical body.

That good mental hygiene can keep a mild case from becoming worse is demonstrated in the rather large group of curable mental conditions which have a tendency to recur, for proper care during the periods of remission can prevent re-

lapses. It was but a short step to demonstrate the truth of the general proposition that if one can prevent the second and the third recurrence, so he might have prevented the primary illness could he have recognized in time the possibility of its development. In this our hospital and out-patient departments are becoming more and more proficient.

Only one generation ago, as a result of the splendid combined work of psychiatrists and psychologists we began to understand more about that large group of so-called functional neuropsychoses; hysteria, neurasthenia, psychasthenia, etc.; conditions which seldom indeed make the patient insane, but which nevertheless are tremendous handicaps, greatly limiting the joy and efficiency of his life. These patients offer a splendid field for mental hygiene. They certainly must form new mental habits, must learn to adjust themselves in the environment in which they find themselves, but they also must learn to keep their physical condition at the best level possible. They must be relieved of physical handicap, such as eye strain, which has caused many a mental twist; nasal obstruction, which often adds the element of depression to the clinical picture; slight undiscovered diseases in lung and heart, which give reason for the feelings of self depreciation or which lead to overcompensated impulses of an antisocial character; and various disturbances of the internal secretions which, although greatly exaggerated, lend many an unfortunate emotional tone to personality.

The number of evidently normal persons for whom mental hygiene has a definite message is surprising. Our educational experts should look to it not only for assistance concerning the dull ones of the class (and how many of these have defects of vision, bad tonsils and enlarged adenoids, etc.), but even more so for enlightenment as to the direction of the abilities of the bright ones. Many a reformer is unreasonable because of an unsatisfied emotional urge which better mental hygiene could have modified.

The unrest of industry may be partly political and partly social, but it certainly has a mental side, and this mental side in turn often has a physical aspect, perhaps latent disease of arteries, heart, kidneys, etc., which may give no symptoms, but which explains that unusual fatigue which precludes success and favors discouragement.

The problem of divorce may be economic and social but fundamentally it too often is the result of poor mental hygiene combined with poor physiology. Explain crime as you will, the antisocial tendencies which make the boy a criminal are in large degree proper problems for the combined study of the mental hygienist and the physician. For illustration, Hon. Thomas Marshall, when Governor of Indiana, found in the reform school a boy who looked so little the part of one who would break and enter a store that he asked for a study of the case. Our clinic found a congenital defect of vision which reduced the boy's vision to only one-fifth of normal. The boy, of course, had always supposed that he could see just as well as all other boys. How could he think differently? How could that boy explain his failures at school and at work otherwise than that the world was against him? Naturally he fell into bad mental habits.

In the field of child training also mental hygiene has a large place. Even in the sphere of religion it occupies a place similar, perhaps, to that assigned to philosophy, that is, as a means not of discovering truth but of testing it; of separating truth and error. Certainly mental hygiene may help develop the divine inspiration in man and discourage the enthusiastic but self-deceived neuropath who in past centuries has figured far too largely in the history of religion.

Even the plain average man can find mental hygiene of value, and it is just these numerous and interesting

opportunities for service which to-day contain the greatest danger of mental hygiene. Already the enthusiasts are applying its methods in ways which cannot but discredit it. Partially trained psychologists with a few scattered ideas of biology, with the story of the Kallikak family under the arm and Binet's test in hand, are emphasizing, not general tendencies nor possibly useful working hypotheses, but are loudly proclaiming impending disaster and strenuously preaching reform and insisting on the passage of laws which no well-trained person can consider seriously.

But since among the above described reformers are so many A.B.'s, M.D.'s, Ph.D.'s, LL.D.'s and D.D.'s, who then is this "well-trained person" so slow to be aroused to a realization of our national crisis resulting from kakagenesis? To answer this question we would repeat that physical hygiene is not a by-product of general medicine but its logical conclusion. Physical hygiene rests on medicine and medicine in turn rests on the premedical and the preclinical sciences. To reach physical hygiene one must work through all these stages. We know no other route, no shorter cut, to this goal. Other sciences such as engineering have helped, but the truths of hygiene as applicable to the actual conduct of men and women must be thought out by those actually well trained in general medicine; and the greatest enemies of physical hygiene are not those who fight it but the enthusiastic reformers without sufficient training who preach it.

Mental hygiene, in turn, is the highest flowering of clinical psychiatry, and psychiatry is a branch of general medicine and of psychology. Psychology has been necessary, even very important, in the development of mental hygiene. Not for one moment would I belittle the importance of its indispensable contributions. But it does not overlap the field of medicine. Medicine has contributed to mental hygiene a sympathetic understanding of the mental problems of the handicapped by those who understand the physical side also. Yet listen to the voices articulate today on lecture platform and before legislative committees; it is not the voices of such as these which we hear. The laboratory men, the would-be psychologists, the public health nurses and especially social workers are the enthusiastic reformers. Of course, we need their help; they are essential to the cause; but as those under authority and not as leaders. The rôle of assistant, however, does not at all satisfy them. They are demanding immediate reform and denouncing the expert for his conservatism.

You leaders of physical hygiene have had your bitter experiences; you have witnessed the flotsam of the stream of rapidly advancing knowledge gathered and made into health creeds and rituals. You have seen laboratory sputum examinations for *Bacillus tuberculosis* given an authority in the diagnosis of tuberculosis which in the very nature of the case they cannot possess. You have seen the very valuable Wassermann test proclaimed as positive proof of the presence or absence of a certain disease; but it is not. And we also have seen the valuable Binet tests in the hands of enthusiastic persons bring nothing but discredit on the mental hygiene movement. Do not misunderstand me. These tests are wonderful tools in the hands of those who are trained to use them wisely, but they are dangerous in the hands of those without adequate training who think that the tests alone decide anything. How often the tentative opinions of a few years ago are quoted to-day as established truth. This is the danger of organizations such as ours, that in its propaganda it tends to stereotype developing opinion into dogma.

Again, do not misunderstand me. There is much established truth. Our laws governing health should be rewritten; but it is only in the dim, and possibly distant, future that accurate knowledge will justify the radicalism of the reforms demanded so loudly today. On the positive knowledge we now have we

could base several beneficial reforms: better staffs in our hospitals for the insane; more trained nurses in them; better medical supervision for the schools; more education in mental hygiene for fathers and mothers; better supported medical schools and training schools for nurses allowing the training of better doctors and nurses; and many others. With more accurate information we can attempt other problems, but at present we have not nearly enough to justify even the more temperate demands of reformers. And, finally, we must keep leadership in the hands of the well trained.

As in the time of Pinel, only he can speak helpfully of reform in the field of mental hygiene who has climbed tediously up the grades of general medicine with its six years of training, then of clinical psychiatry with at least four years of additional training, and who in addition to this has proved that these years have been well spent and that he is by nature as well as by training fitted for these responsible duties. This is the program of the National Committee on Mental Hygiene. If we can provide such leaders, then we shall, I believe, have made a worth-while contribution to the health, happiness and efficiency of society.

THE LABORATORY ASPECTS OF OYSTER POLLUTION*

LEONARD M. WACHTER, FELLOW A.P.H.A.
Division of Laboratories and Research, New York State Department of Health, Albany, N. Y.

IT IS my opinion that if environmental conditions are favorable oysters increase in size and in rapidity of growth in direct proportion to the amount of proper food available to them; and further that sewage by encouraging the growth of algae and protozoa, indirectly at least, furnishes such food. It follows therefore that the more sewage the water contains, the larger will the oysters be and the more rapidly will they grow, unless the amount of sewage has reached such a concentration and is in such a state that the oysters are smothered, rather than nourished.

The water in which oysters are growing may range from that which is grossly polluted by sewage which furnishes a most generous supply of food, to that where no dangerous pollution is, or is likely to be present, and where food is less plentiful or even relatively scarce. The term "good oyster grounds" may indicate one thing to the sanitarian and quite another to some oyster harvesters.

The sanitary conditions under which the oysters are gathered and stored, prior to final shipment, are other factors affecting their bacterial purity, and the conditions under which they are shucked have an important bearing upon the safety of shucked oysters as food. Again, the methods of packing, the degree of refrigeration, and the length of time they are in transit or are held after leaving the oyster packing house further affect their quality. Finally, oysters are subjected to many conditions that might introduce infectious material and which are common to food products served raw or heated, but in the latter case not sufficiently heated to accomplish efficient pasteurization.

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One cannot go far in a discussion of this kind without first defining the term "pollution." Oyster scores based on the *B. coli* group content of oysters can only be an index of pollution in the broad sense, including pollution from man and also from other animals. For this reason it is only possible by facts obtained by sanitary surveys and inspections to establish the possibility of the presence of dangerous pollution—that from man. Consequently, in this discussion the terms "polluted waters," "polluted oyster beds," and "polluted oysters" refer to those waters, those oyster beds, and those oysters that have been in contact with pollution from man. Pollution from this source constitutes the danger to the consuming public.

Our Division of Laboratories and Research in its circular of instructions on water examinations definitely states: "The laboratory examination determines the presence or absence of pollution at the time of the sampling. The field inspection determines the sources and the nature of the pollution and thus the significance of its presence or absence." This statement would seem to be equally true in regard to the significance of the results of laboratory examinations of oysters.

It is quite generally conceded that when the waters in which oysters grow reach a rather definite low temperature, the oysters have a much slower metabolism, if they do not actually hibernate. The completeness of the hibernation may be a debatable question. It is also quite generally accepted that oysters from locations definitely known to be heavily polluted will give high scores during the season of warmer water and give low scores shortly after the water has reached the low temperature limit.

It seems reasonable to assume that, if the oyster beds are located where there is pollution which accounts for the high score when the water is warm, the low scores obtained during the hibernating period do not justify the same assurance of safety as would low scores on oysters taken from a bed not subjected to pollution, and where the scores are low even when the water is warm. Similarly, if purification of oysters by chlorination were to be adopted commercially, a low score after such treatment of oysters, originally from a badly polluted source, should not furnish the same assurance as an equally low score on oysters from a presumably unpolluted source, just as the occasional presence of members of the *B. coli* group in 10 c.c. volumes of water from a watershed on which permanent sources of pollution from man are absent, but where a few domestic animals may be pastured, is certainly not so disturbing as the equal prevalence of *B. coli* would be in treated water from the Hudson River at Albany, N. Y., for example.

The accident of sampling also affects oyster scores and it would seem therefore that, if each of five oysters were examined separately from all volumes tested, the results would give a fairer estimate of the quality of the oysters than if the mixed liquor of five or more oysters were examined. However, the extra work involved discourages the use of the first method in general routine control of oysters.

Our experience has been that at times the results of oyster examinations show high scores on oysters collected by our own staff from beds where the sanitary survey does not indicate conditions that would justify high scores. Resampling from the same beds and reëxamination very often give low scores. On the other hand, at other times low scores may be obtained on oysters coming from beds that might be expected to give high scores. Such experiences suggest that the results from a single examination are not sufficient to justify a final conclusion on the safety of oysters taken from a particular locality.

High oyster scores may be due to the multiplication of a few organisms of the

B. coli group as a result of oysters being kept at temperatures not sufficiently low, or being kept too long a time, during which their vitality is lowered or they have actually died. Thus, high scores at inland points may suggest at least that the oysters are not in good condition or were not properly handled, even though they originally came from a safe source.

The significance of the results of oyster examinations, then, is subject to the vagaries of sampling, the seasonable variation in the metabolic activity of the oysters, the possible pollution of only part of the oysters coming from a particular bed, the possibility of intermittent and not constant pollution of the beds, the possibility of intermittent or constant pollution of the waters in which oysters may be transported, floated or stored, prior to packing and shipping, the methods of shucking and packing in the case of shucked oysters, and lastly the vicissitudes of transportation, refrigeration and retailing. It is our opinion that the significance of oyster scores should be conservatively interpreted.

The safety of the oyster consuming public should be assured by the following measures:

1. Prevent the harvesting of oysters from polluted beds. There must be agreement as to what constitutes safe oyster beds. It may not be necessary (or possible) to fix standards for the water over oyster beds and oyster packing plants as high as that for drinking water; but a standard that represents safety must be maintained.

2. Prevent oysters, while being transported to the packing houses, floated or stored, from coming in contact with polluted waters or with waters that are subject to conditions which would make pollution probable.

3. Maintain strictly sanitary conditions at the packing house.

4. Permit oysters to be handled only by employes who have been examined and found to be free from communicable disease that may be transmitted by food that is consumed raw.

When these conditions are enforced, the oyster producing states have fulfilled their obligation to the oyster consuming public. In so far as laboratory examinations can aid in bringing about these conditions and in detecting deviations from such conditions, they are of value. Low scores in themselves do not assure that the oysters are safe.

The oyster eating public and the oyster industry will be protected only when all oyster producing states enact and enforce legislation that will prevent the sale of oysters that have been harvested from polluted areas or handled in a manner that will affect their purity. The state of New York has enacted legislation within a year delegating the necessary power and fixing the duties of the State Commissioner of Health and the State Conservation Commission with reference to the control of the production and handling of oysters. The enforcement of these laws will assure the sanitary quality of oysters sold by New York State producers. The coöperation of the United States Department of Agriculture, the United States Public Health Service and the responsible officials of other oyster producing states will prevent entrance into our state of oysters that cannot be certified as of equally safe sanitary quality.

In conclusion, I would repeat that the results of laboratory examination of oysters should be interpreted in the light of a knowledge of the conditions under which the oysters are produced and handled. The results can only indicate deviations from the normal. The cause of such deviations must be determined by investigation and inspection. The solution of the oyster problem will require the best efforts of the oyster men, the public health administrators, the sanitary engineers and the laboratorians.

THE PLACE OF SANITARY ENGINEERING IN PUBLIC HEALTH ACTIVITIES*

GEORGE W. FULLER, FELLOW A.P.H.A.
Consulting Engineer, New York City

THE RELATION of the engineer to public health work was discussed by Abel Wolman at Detroit last year, with the result that much interest has been aroused in the performance of different groups of workers and in the means of bettering their present functioning. Such betterments should come chiefly through educational, research and administrative lines, respectively.

The expression "Sanitary Engineering" seems no longer to be acceptable to many. At the International Conference in London, last year, the president in his opening remarks proposed that the term "Sanitation Engineering" be used. Mr. Wolman at Detroit proposed "Public Health Engineering," and it is interesting to note that a few months ago there was published a book by Earle B. Phelps, Professor of Sanitary Science in the College of Physicians and Surgeons, Columbia University, on *The Principles of Public Health Engineering*. A perusal of the excellent introduction to this book is well worth while for all workers in the public health field. It shows clearly that this subject is a broader one than was understood from the old orthodox viewpoint, with respect to water supply, sewage disposal and garbage disposal. There are many other lines wherein the engineer could and should help in making community life safer and more comfortable. The new scope and the new name make for real progress.

The engineer has to do both with theory and practice. He applies scientific data to the design, construction and operation of various types of structures which cost large sums of money both for installation and for operation. Essentially, the engineer who is abreast of the times should know what to build as well as how to build, and he needs ability to secure authorization for funds in competition with other demands.

The engineer should have sympathetic appreciation of other work in the public health field and have ability to stimulate appreciation in others of his own activities. Coöperation and coördination of activities, with resulting teamwork, are better for all concerned than competition and antagonism with resulting lost motion and delay.

Public health workers should unite into a single professional group with such coordinated subdivisions as will effectively meet changing conditions.

Public health education is undoubtedly moving forward. Its engineering aspects, as conceived at Johns Hopkins, Harvard and elsewhere, are being reasonably developed from the new and broadening viewpoint. But education should by no means be limited to that which is available at institutions of learning. Unusual effort should be made to develop a better understanding of public health relations in a comparative sense on the part of a wide range of our citizens, particularly those related in an official capacity to the conduct of public welfare.

To illustrate, it is believed that from the educational standpoint a real accomplishment has been made recently through

* Read at the First General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

the publication by the American Water Works Association of the first edition of its *Manual of American Water Works Practice*. While aimed toward standardization of practice, its usefulness in no small part will relate to the broader and sounder views which it should promote. There can be developed progressively by such means clearer ideas of what the public health signifies to a community and what part the engineer and others can perform most advantageously.

Research has been an important factor in showing how engineering works can be suitably designed, built and operated. Since the world war, such activities on a laboratory scale have been less marked than previously. On the other hand, to the engineer a substantial, necessary portion of his added knowledge comes, not from the small scale investigations closely associated with laboratories, but from careful observations day by day of the operations of large plants in practice. Viewed from this standpoint, the engineers in the public health field have probably been more alert and thoroughgoing than is realized by the non-engineering groups.

These remarks are made without any desire to belittle research as it is ordinarily understood, but simply to point out that data from practical operations are important and have not been ignored. Associated with this subject are committee reports presented at the meetings of the Engineering Section, urging, among other things, better plant operation for water and sewage purification.

Some brief but specific observations on the steady progress being made in the field of public health engineering appear to offer the simplest method of demonstrating the variety of activities that the control of public health actually requires of the engineer.

PUBLIC WATER SUPPLY

There is a well defined trend for better water supplies. Not only are they becoming safer hygienically, but, in order to be satisfactory they must be of better appearance as to turbidity and color, as well as substantially free from objectionable tastes and odors. That the quality of water supplies is being improved is best shown by the progressive lowering of typhoid fever death rates throughout the country, with a corresponding saving of human life. This was pointed out by Dr. Vincent at the Boston Meeting.

While research may not be bringing forth outstanding discoveries in the control of water supplies, the engineers are securing year by year helpful data from operating experiences and doing all within their power to place the operation of plants in the hands of competent and reliable operating staffs. Although current progress has not been so spectacular as formerly, it is substantial. Much remains to be done in bettering water supplies and it is important for public health workers in other fields to appreciate this situation and to do their part in bringing about needed administrative action and funds.

The report of the Advisory Committee[1] appointed by the Surgeon General of the United States Public Health Service in May, 1922, to review the Treasury Department Standard for drinking waters and to recommend new standards of water supply quality, proposes a more comprehensive and more practically applicable standard than the 1914 Treasury Standard, in that it places the emphasis upon the sanitary survey which that phase of judgment requires.

Noteworthy among coöperative undertakings is the Sixth Edition of the *Standard Methods of Water Analysis* which has been sponsored, prepared, approved and published jointly by the American Public Health Association and the American Water Works Association.

Helpful coöperation between states has been illustrated by the Interstate Pact of the states of Pennsylvania, Ohio and West Virginia in the matter of phenol-waste control.

In the Melcroft Coal Co. case, whereby the Mountain Spring Water Co. sought

to restrain the coal company from polluting its Indian Creek water supply, the Pennsylvania State Supreme Court reversed the lower court decision and gave the coal company 6 months in which to remove acid wastes from the streams in question. The U. S. Supreme Court declined to review this finding, and it is understood that progress has been made by the coal companies in removing their wastes to a point below the reservoir, with pending proceedings as to contempt of court because of failure to remove wastes within the 6 months' time limit expiring last July. This case is making history.

Among newer topics, probably the most important is the iodizing of water supplies for the prevention of simple goiter. The chapter on this subject in the *Manual of American Water Works Practice* is probably the best exposition and is, in my opinion, of sufficient value to justify all effort through committee activities for the 5 years spent in the preparation of that manual. The actual iodizing of water supplies naturally deficient in iodine has not progressed as rapidly as it should, although recently the practice has been adopted at Sault Ste. Marie, Mich., Minneapolis and Virginia, Minn., as well as being continued at Rochester, N. Y., where the method was first practiced in this country.

In England, water supplies are iodized at Ilkeston and Heanor, the chief feature being that iodine is supplied continuously rather than intermittently in accordance with American custom.

SANITATION OF WATERWAYS

Research work of importance has been done by the U. S. Public Health Service on the Ohio and Illinois Rivers, the latter work in relation to the Chicago Drainage Canal, and in association with the Natural History Survey of Illinois and the Sanitary District of Chicago.

As compared with European practice, particularly in Germany, the method of characterizing streams by the presence of certain typical organisms, as distinguished from the residual oxygen method for studying stream conditions, has not progressed in this country so far as might advantageously be the case.

SEWAGE PURIFICATION

The chief item of record here is the fact that large plants for purifying sewage by the activated sludge method have been put in service by the cities of Milwaukee and Indianapolis. A plant of this type to serve 800,000 people is being built by the Sanitary District of Chicago.

The disposal of local sewage in relation to the city water supply of Chicago and to other questions has been reviewed by a board of twenty-eight engineers. Its reports dealing with various aspects of this complicated problem approve a program for building sewage treatment plants so as to relieve promptly the overloaded Drainage Canal. Another important outcome has been the adoption by the City of Chicago of a program for the installation of meters to eliminate progressively the needless waste of water which makes unduly expensive the filtering of the city supply as well as the works needed for collecting, pumping and purifying the sewage. There has just been issued an important report by the committee on sewage disposal of the Chicago Board of Review.

At Worcester, Mass., Imhoff tanks and trickling filters have been put in service, replacing the old chemical precipitation and intermittent sand filter plant.

Consideration has been given at several places to the collection of gases of decomposition from tanks in which sewage sludge is being digested. They ordinarily contain some 75 to 85 per cent methane, and may be sufficient to go a long way, especially during warm weather, towards providing power needed in the activated sludge process. In Germany, gases from sludge digestion are sold at several places for delivery into the city gas mains.

In the field of research, mention may be made of the investigations conducted

the publication by the American Water Works Association of the first edition of its *Manual of American Water Works Practice*. While aimed toward standardization of practice, its usefulness in no small part will relate to the broader and sounder views which it should promote. There can be developed progressively by such means clearer ideas of what the public health signifies to a community and what part the engineer and others can perform most advantageously.

Research has been an important factor in showing how engineering works can be suitably designed, built and operated. Since the world war, such activities on a laboratory scale have been less marked than previously. On the other hand, to the engineer a substantial, necessary portion of his added knowledge comes, not from the small scale investigations closely associated with laboratories, but from careful observations day by day of the operations of large plants in practice. Viewed from this standpoint, the engineers in the public health field have probably been more alert and thoroughgoing than is realized by the non-engineering groups.

These remarks are made without any desire to belittle research as it is ordinarily understood, but simply to point out that data from practical operations are important and have not been ignored. Associated with this subject are committee reports presented at the meetings of the Engineering Section, urging, among other things, better plant operation for water and sewage purification.

Some brief but specific observations on the steady progress being made in the field of public health engineering appear to offer the simplest method of demonstrating the variety of activities that the control of public health actually requires of the engineer.

PUBLIC WATER SUPPLY

There is a well defined trend for better water supplies. Not only are they becoming safer hygienically, but, in order to be satisfactory they must be of better appearance as to turbidity and color, as well as substantially free from objectionable tastes and odors. That the quality of water supplies is being improved is best shown by the progressive lowering of typhoid fever death rates throughout the country, with a corresponding saving of human life. This was pointed out by Dr. Vincent at the Boston Meeting.

While research may not be bringing forth outstanding discoveries in the control of water supplies, the engineers are securing year by year helpful data from operating experiences and doing all within their power to place the operation of plants in the hands of competent and reliable operating staffs. Although current progress has not been so spectacular as formerly, it is substantial. Much remains to be done in bettering water supplies and it is important for public health workers in other fields to appreciate this situation and to do their part in bringing about needed administrative action and funds.

The report of the Advisory Committee[1] appointed by the Surgeon General of the United States Public Health Service in May, 1922, to review the Treasury Department Standard for drinking waters and to recommend new standards of water supply quality, proposes a more comprehensive and more practically applicable standard than the 1914 Treasury Standard, in that it places the emphasis upon the sanitary survey which that phase of judgment requires.

Noteworthy among coöperative undertakings is the Sixth Edition of the *Standard Methods of Water Analysis* which has been sponsored, prepared, approved and published jointly by the American Public Health Association and the American Water Works Association.

Helpful coöperation between states has been illustrated by the Interstate Pact of the states of Pennsylvania, Ohio and West Virginia in the matter of phenol-waste control.

In the Melcroft Coal Co. case, whereby the Mountain Spring Water Co. sought

to restrain the coal company from polluting its Indian Creek water supply, the Pennsylvania State Supreme Court reversed the lower court decision and gave the coal company 6 months in which to remove acid wastes from the streams in question. The U. S. Supreme Court declined to review this finding, and it is understood that progress has been made by the coal companies in removing their wastes to a point below the reservoir, with pending proceedings as to contempt of court because of failure to remove wastes within the 6 months' time limit expiring last July. This case is making history.

Among newer topics, probably the most important is the iodizing of water supplies for the prevention of simple goiter. The chapter on this subject in the *Manual of American Water Works Practice* is probably the best exposition and is, in my opinion, of sufficient value to justify all effort through committee activities for the 5 years spent in the preparation of that manual. The actual iodizing of water supplies naturally deficient in iodine has not progressed as rapidly as it should, although recently the practice has been adopted at Sault Ste. Marie, Mich., Minneapolis and Virginia, Minn., as well as being continued at Rochester, N. Y., where the method was first practiced in this country.

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In the field of research, mention may be made of the investigations conducted

by the state of New Jersey through its State Experiment Station with particular reference to biological activities in Imhoff tanks and sprinkling filters under different operating conditions.

Mention may be made of the Schenectady investigations for the control of odors on the psychoda fly by chlorination, and also of the symposium on "Control of Odors" presented before the Sanitary Engineering Division of the American Society of Civil Engineers in January.

COLLECTION AND DISPOSAL OF GARBAGE AND OTHER SOLID REFUSE

The orthodox view of earlier years as to sanitary engineering nominally included this topic with the two major items of water supply and sewage disposal. It has been well said that garbage disposal was an orphan child of sanitary engineering. Engineers have had only random contact with it and their authority and opportunities for needed research have been inadequate to ascertain what the problem really is in different cities and how works can be best built and operated.

During the war, reduction plants prospered due to high price of grease and fertilizers. The same may be said of hog feeding plants for many small or medium size cities.

Economically, conditions have been very different during the past few years and there has been a well defined trend in the direction of incineration and against reduction and hog feeding, particularly for large cities. Not only are revenues now less favorable to the two latter processes, but the view is growing that garbage disposal should be accomplished in a sanitary way with the cost aspect of secondary significance. The public is less tolerant of offensive odors and seems willing to pay for needed works selected on the basis of efficiency of service. It is worth noting that sizable incinerator plants have been installed recently at Philadelphia, New York and Toronto and large plants have been put under contract at Buffalo, Minneapolis and Chicago.

The principal need of this branch of municipal sanitation now in the hands of various competing companies with proprietary devices for sale is a thoroughgoing investigation by competent disinterested engineers to give results commensurate with present public demands for better performance. It is also fertile field for the industrial chemist.

In New York State, the 1925 Legislature passed a law providing for the establishment of districts for the collection of garbage or ashes or both in certain counties, such being specially directed to the towns and villages in Nassau County, Long Island.

ELIMINATION OF INSECTS AND VERMIN

The U. S. Public Health Service has established and maintained on the Mexican border rigid control of Aedes calopus breeding, as protection against yellow fever.

In Florida an enabling act was passed by the legislature last spring for the establishment of mosquito control districts. These are of importance in preventing yellow fever, malaria, dengue fever and filariasis and in promoting efficiency and more comfortable living conditions.

Activities of mosquito extermination commissions in Nassau County, Long Island, and Hudson, Atlantic, Union and other counties in New Jersey have made substantial progress. More than 30 other county organizations are under way and the railroads in the south are expanding their useful work in this direction. Greater activity in this work should be supported and encouraged by health workers in other localities.

The common house fly has long been recognized as a public health problem and there is urgent need for effective campaigns against the menace.

Rat-proof construction has received attention in New Orleans and some other cities, although there has been little gen-

eral consideration given to the elimination of rats along waterfronts, garbage dumps and the like. It needs a campaign of suitable publicity with financial support for an adequate remedial program.

GENERAL CONSIDERATIONS

Pollution of bathing beaches particularly along the waterfront in the New York district has received substantial consideration during the last year or two, largely as a result of mild outbreaks of typhoid fever.

Oyster pollution attracted much attention last winter and in some of the joint section meetings this question will be discussed at length and reference made to means of self-purification of oysters under suitable methods of cultivation.

Another question in which engineers are interested is in the nation-wide program instituted by the U. S. Public Health Service for milk control with its associated mechanical and engineering arrangements. There is some indication that milk treatment processes will be ultimately placed under as careful technical supervision and control as similar water supply treatment processes are now placed.

Another field of investigation relates to artificial and daylight illumination in furthering the conservation of vision, especially in schools and industries.

Suitable town planning and housing have been shown to have a marked effect in contributing to a reduction of tuberculosis and other respiratory diseases. Studies of the quality of air in certain industrial plants and in congested centers have been helpful in showing and mitigating the effects of harmful dust and gases, particularly with relation to carbon monoxide from automobiles in busy traffic ways.

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ADVANCEMENTS IN PUBLIC HEALTH NURSING*

ALTA ELIZABETH DINES, FELLOW A.P.H.A.

Association for Improving the Condition of the Poor, New York City

ADVANCEMENTS in public health nursing result from all advancements in the field of public health. We think of the public health nurse as but a part of public health nursing and always in relation to the people served, the public health to be conserved and protected, and the other great groups of health workers. These groups are truly interdependent and the public health cannot be adequately protected unless the work of all is of a high quality. We think of the public health nurse in relation to the agencies who employ her and sponsor her—the agencies supported by tax moneys and by private voluntary contributions. We think of her in relation to the boards of directors or committees representing the citizens and contributors who assume their part of the responsibility for this phase of public health protection and whose interest she carries into the homes of the people. In considering recent developments in public health nursing, we should review advances made in preventive medicine which need to be interpreted to these people of all age groups in their homes (the part of the public health nurse), and that review has been

* Read at the First General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

or will be made admirably at these meetings; we must needs pay our respects to better organization and better methods of financing; we bow to research and improved technique, which experience, intelligently profited by, has made possible.

The part of the public health nurse, then, is relative—and all advances made which have tended to improve and safeguard the health of the people whom she teaches and serves have stimulated her to higher standards, to better preparation, to more complete and effective work in the families and communities.

Several trends in the field of public health nursing are worthy of especial note:

1. There is an increasing tendency on the part of official health agencies to assume the responsibility for public health nursing services, the value of which has been demonstrated—often by private organizations—or to project or participate in projecting demonstrations that will prove the value of such services.

2. There is an increasing tendency toward research. Several careful studies have been made in order to evaluate service, to improve standards and to bring together facts which will reveal the need for and the cost of public health nursing. An effort is being made to determine the amount of work left undone and to measure the economy of education in the homes, that aims to help in the promotion of health and prevention of disease.

3. There is an increasing tendency to demand a more carefully prepared group of women in this field with adequate general and professional education, with special theoretical and practical work in public health nursing. It is not a strange request, these days, that a position be filled by a college graduate with approved nurse's education and special postgraduate work of 1 or 2 years.

4. There is an increasing consciousness on the part of industrial agencies, large and small, of the value of public health nursing—hence an increasing interest on the part of nurses in the opportunities for rich service among large numbers of employes through teaching in groups; and following up the group teaching in the homes. For instance, several large insurance companies are offering public health nursing services to their policy holders, individual and group, and at least one of them sends nurses to speak to the groups of workers and enlist their interest in and desire for health protection through the public health nurse.

The international aspects of public health nursing are also increasingly interesting and worth while. For years the foreign student has been a familiar figure in public health nursing courses in this country; for several years the League of Red Cross Societies has maintained in London a course in public health nursing for the international students sent by national Red Cross Societies.

At present, in almost every country, specially prepared nurses are carrying on public nursing programs and in several countries the demand for such properly qualified nurses has been the means of introducing standard schools for nurses.

So, in the progress of the years, public health nursing in its relative way, has grown to be a world-wide idea of world-wide significance, as well as a community idea of increasing community significance, at the same time depending for any note of real progress on results in the homes—namely, healthier babies, children and adults and consequently richer lives and better citizenship.

MEDIA USED IN SHIPPING SPECIMENS FOR ISOLATION OF TYPHOID BACILLI *

E. MARION WADE, WINIFRED I. KELLY AND MARY E. GIBLIN
Minnesota State Department of Health, Minneapolis, Minn.

SATISFACTORY methods for the isolation of typhoid bacilli from bowel and bladder discharges have for a long time been sought by many public health laboratory workers. Success in isolating typhoid bacilli from untreated bowel discharges depends to a very large extent upon the promptness with which the plating of the specimen is done. In Minnesota, the time consumed in transit of specimens by parcel post from different parts of the state to the laboratory often amounts to 2 days.

Our routine work in the isolation of typhoid bacilli from stools and urine, for the most part, relates to the detection of typhoid carriers in the investigation of typhoid outbreaks of one or more clinical cases. To date, 137 carriers of typhoid or paratyphoid bacilli have been identified. Believing that the chances of success in isolation of typhoid bacilli are greatest from a specimen that has descended from the upper duodenum in the shortest possible period, we have always directed that specimens from suspected carriers be collected after the use of a mild cathartic or laxative and that the last portion of the stool be collected.

Up to January 1, 1925, when a change in the manner of the collection and shipment of specimens was made, outfits, elsewhere described,[1] which were inadmissible to the mails, were used and specimens were collected without the addition of any enrichment or preservative medium. The specimens were shipped by express, and the shipper notified the laboratory by telephone or telegraph of the time of shipment. The train was met on its arrival and the laboratory examination was begun promptly.

Incidentally, this necessitated much night work. The untreated specimens were plated on lactose agar pH 7.2 made from meat infusion broth with litmus and later with brom cresol purple, as an indicator, 9 plates being used. The material was placed on the first plate of the series and streaked over the remaining plates by means of a sterile glass rod bent at right angles. The rod was not sterilized between plates. In this way isolated colonies were obtained on several of the last plates of the series.

Fishings from typical colonies were planted on either litmus lactose agar or brom cresol purple lactose agar, examined microscopically after staining by Grams' method and planted into broth, milk, brom cresol purple dextrose broth, and brom cresol purple saccharose broth. The last 2 media were used in U tubes for gas determination. Finally, the broth cultures were used for motility and agglutination with high titer specific serum. In this manner up to January, 1925, 127 carriers had been identified.

Beginning October, 1917, a study was made comparing the results from plating the routine specimens including a few from suspected cases of typhoid fever with platings made at varying intervals from the same specimens after suspending in glycerine saline solution (30 per cent glycerine in physiological salt solu-

* Read before the Laboratory Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

tion). Because of the growth inhibiting action of the glycerine saline solution, but 5 plates were necessary to obtain abundant isolated colonies. Otherwise the technique was as detailed above.

In this way, 2,143 specimens of feces were examined. The platings from the glycerine saline suspension gave positive findings on 5 specimens, *B. typhosus* in 4, and *B. paratyphosus B.* in 1, while direct plating gave negative results. Aside from these 5, results agreed on both platings in all specimens, 192 showing *B. typhosus* and 26 *B. paratyphosus B.*

We were so thoroughly satisfied that the glycerine saline suspension gave as good results as the direct plating with specimens necessarily as old as were secured that we began to use this solution in our outfits.

We then substituted for the old non-mailable outfit a double mailing can containing two 2 oz. wide-mouthed bottles (one for feces and one for urine), the feces bottle containing 30 c.c. glycerine saline solution, 2 collapsible waxed paper boxes, 4¾" x 4" x 4", and a paper teaspoon with the necessary directions and data card. The patient is directed (1) to take castor oil or other mild cathartic or laxative, (2) to pass feces directly into one of the paper boxes and urine into the other, (3) to transfer one spoonful of feces to the bottle marked "feces" and thoroughly emulsify if firm, (4) to pour sufficient urine into the bottle marked "urine" to make bottle three-quarters full, (5) to mail bottles to Division of Preventable Diseases and destroy paper boxes, contents, and spoon in a safe manner.

Very soon after the adoption of this new outfit, January 1, 1925, the article by Dr. Havens and Miss Dehler [2] on the use of brilliant green bile for the collection of typhoid stools appeared. We were at once much interested to see if we could confirm their findings with the expectation of changing to the brilliant green bile if through its use we could get a higher percentage of positive results.

For this special study our procedure was to obtain discharges from clinical cases of typhoid fever and plate the specimen as soon as received, as described above. The length of time from collection to plating averaged 9 hours. At the time of the direct plating an equal quantity, about 1 g., was placed in 15 c.c. of each of the following solutions: (1) glycerine saline solution, (2) brilliant green glycerine saline solution (30 per cent glycerine in physiological saline + 1:1500 brilliant green), (3) brilliant green bile (1:1500 brilliant green in Difco dehydrated oxgall 100 g. to litre). These 3 inoculated suspensions were then left at room temperature and plated from time to time by withdrawing with a sterile pipette .05 c.c. of the supernatant fluid and streaking it over 5 plates of brom cresol purple lactose agar. The confirmation of colonies fished was the same as reported above. On the first 23 positive specimens plating was continued at intervals until no more typhoid organisms were found. On the last 10 specimens, because of the large number of plates needed, plates were made daily for 4 days only. The average time between onset of symptoms in the clinical cases and collection of specimens was 29 days.

In this way comparative tests were made of 46 specimens of feces which were obtained from 31 clinical cases and two chronic carriers. Of the 31 clinical cases, positive findings were obtained in 23, or 74.2 per cent. Of the 46 specimens, 13 were negative throughout so that no comparisons were possible. These 13 specimens averaged 9 hours in transit and came from clinical cases with average duration of 30 days. Of the 33 positive specimens, *B. typhosus* was obtained from the direct plates in 25, from the glycerine saline suspension in 28, from the brilliant green glycerine saline suspension in 32, and from the brilliant green bile in but 12. In 1 specimen the direct plating was the only one positive and just 1 colony of *B. typhosus* was

obtained. In 1 specimen the only positive was obtained from the brilliant green glycerine saline suspension and just 1 colony of *B. typhosus* obtained. The longest period during which *B. typhosus* was isolated from a feces suspension after collection of the specimen was 29 days. On this day *B. typhosus* was isolated from both the glycerine saline suspension and the brilliant green glycerine saline suspension.

Counts were made of the number of typhoid and other colonies on all plates with isolated colonies on all platings. The total number of isolated typhoid colonies on all platings made through the fourth day was 3,960 from the glycerine saline suspension, 6,077 from the brilliant green glycerine saline suspension, and 677 from the brilliant green bile. The number of other colonies was least on plates from the brilliant green glycerine saline suspension, and most on the brilliant green bile suspension. This was especially noticeable in the presence of *B. pyocyaneus*, this organism growing very abundantly on brilliant green bile, less so on glycerine saline and scarcely surviving on the brilliant green glycerine saline solution.

More of the feces specimen can safely be added to the brilliant green glycerine saline solution than to either the glycerine saline or the brilliant green bile. Five specimens on which the direct plating showed large numbers of typhoid colonies were plated after 48 hours from suspensions in glycerine saline and in brilliant green glycerine saline made by using 3 to 4 g. of the feces for each. Isolated colonies of *B. typhosus* were found on both sets of plates, but on the plates from the brilliant green glycerine saline suspension they were much more numerous in each case. The same 5 specimens were plated after 48 hours from a suspension in brilliant green bile by using approximately ¼ g. From 2 of the specimens *B. typhosus* was isolated but very few typhoid colonies were present, the plates containing large numbers of *B. coli*. From the other 3 specimens no typhoid bacilli were obtained.

This feature of the brilliant green glycerine saline solution permitting of varying quantities of feces being added, is of considerable value in state work where collection of the specimens must necessarily rest in inexperienced hands.

We are now testing these 3 solutions on specimens of urine and also trying the addition of broth to the glycerine saline as well as trying the modification of the brilliant green bile more recently reported by Dr. Havens.[3] On a small number of specimens tested it is indicated that the brilliant green glycerine saline solution alone may not be so satisfactory for urine specimens as for the feces specimens.

In our experience in state work the use of glycerine saline solution as a medium for the shipment of feces specimens is preferable to depending upon untreated specimens. The advantages are: (1) an increase in the number of successful isolations, and (2) ability to use a larger amount of the specimen for examination.

Of the solutions tested the brilliant green glycerine saline suspension is the most satisfactory.

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REGISTRATION THE FOUNDATION OF VITAL STATISTICS*

WILLIAM H. DAVIS, M.D., Fellow A.P.H.A.
Chief Statistician for Vital Statistics, Bureau of the Census, Washington, D. C.

PERHAPS NO ONE will dispute the assertion that registration is the foundation of vital statistics. But in any case I wish to direct your attention to the nature of this foundation, to the importance of having it well built, to the importance of keeping it in excellent repair, and to the many qualifications needed by a good foundation builder—a good state registrar or a good city registrar.

Ten years ago my predecessor, Dr. Cressy L. Wilbur,† prepared a pamphlet of 86 pages entitled "The Federal Registration Service of the United States: Its Development, Problems and Defects." Assuming that you are all familiar with this excellent presentation, I will merely call your attention to a few of the most pressing registration problems in the United States today:

First—There is the problem of completing the Registration Areas. Not until all the states are included can we have national vital statistics. But the rapid growth of these areas has been most encouraging, and today with 41 states in the death registration area and 33 states in the birth registration area the goal of "Every State in the Registration Area before 1930" seems to be a reasonable one, if public health workers everywhere will lend a hand. However, there is much hard work ahead before the goal can be reached; some of the states need revised laws, some of the states need larger appropriations, and in every state there must be maintained a public demand for the registration of births and deaths.

Let it be understood from the start that this work is not exclusively the work of the Bureau of the Census. It is work which requires the coöperation of the physicians in the entire United States, also the coöperation of the midwives, of the registrars, of all public health officials, and in fact, to provide the public opinion and the money needed, the coöperation of all the families and all the voters of the land.

Second—The second problem of registration is not like the first, one of quantity, but one of quality. How can we improve the quality of the basic data on the birth and death certificates? Here again there is no one procedure which will insure basic data of the highest quality. It is a case of polishing a little here and polishing a little there, but above all it is a case of continual polishing.

You are acquainted with the International List of Causes of Death, revised every 10 years to keep abreast of the times. You are acquainted with the *Physicians' Pocket Reference*, distributed to physicians to help them in their certification of causes of death. You are acquainted with the *Standard Nomenclature of Diseases and Pathological Conditions, Injuries and Poisonings*, first published in 1920 and now being revised —a nomenclature to enable physicians in the United States to speak a common language so that the meaning of their statements can invariably be understood. You are acquainted with the work of

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Missouri, on October 19, 1925.

† Government Printing Office, 1916.

your own Accuracy Committee, which suggests improvements for the International List of Causes of Death and recommends inclusions under each rubric. All of these efforts and many others too numerous to mention tend to produce better basic data.

Of course, of prime importance also are uniform blanks which carry concise and clear-cut questions. You have noted purposely omitted any reference to accidental deaths, to physician's attendance on deceased, and to such other items as the locality where the disease was contracted, operation, autopsy, etc. These are, of course, important items for consideration in the production of an ideal blank, but for the moment it is aimed to center your attention on this substitute section which is based on a form pre-

SECTION OF PRESENT STANDARD DEATH CERTIFICATE

The Cause of Death was as follows:

.....

.....

.....

.....(duration).....yrs. .....mos. .....ds.

Contributory:
(Secondary):.....

.....(duration).....yrs. .....mos. .....ds.

SUBSTITUTE PROPOSED

The Cause of Death was as follows:

The Principal Cause and related antecedent and subsequent causes of importance in order of onset.	Duration		Contributory Causes of importance not related to the principal cause in order of onset.	Duration	
	Onset	End		Onset	End
Antecedent causes:					
Principal cause:					
Subsequent causes:					

on the death certificates of recent years such questions as: "Did an operation precede death?" "Was an autopsy performed?" And the end is not yet, for to-day I wish to present for your consideration a new and better form for the physicians to fill in when certifying the causes of death from disease. A section of the present death certificate is presented here together with a proposed substitute.

To make the matter clear cut, I have sented by Dr. T. H. C. Stevenson, of the office of the Registrar-General of England and Wales.

Today many certificates come in with arteriosclerosis certified as the only cause of death. Now, if physicians were filling in the substitute form, arteriosclerosis would be given in the section marked "Principal cause," but is it not probable that some of these certificates would carry under subsequent causes such additional information as cerebral hemorrhage, and

chronic interstitial nephritis? Where we now have certified the single cause of diabetes, would we not in many cases with the substitute form have tuberculosis certified as a subsequent cause? Again, where we now have certified the single cause cerebral embolism, would we not with the substitute form have endocarditis certified as an antecedent cause? And where we now have cerebral hemorrhage given as the only cause, would we not sometimes with the substitute form have violence of some kind given as an antecedent cause?

It hardly seems necessary to multiply instances of changes which would probably result if the substitute form were used. The very nature of the substitute form clearly indicates that it will register a more accurate photograph of the physician's thoughts than the present form. Other improvements in basic data are to be sought through an amplified certificate for deaths from violence. Space for all of these amplifications can probably be found better by using the back of the certificate than by enlarging the size, though for the data regarding deaths from violence, a supplementary blank may be a still better solution.

Still another registration problem of great importance should be mentioned. Secret certification of causes of death has been carried out successfully for many years in Switzerland—a method of certification which permits the physician to present all the facts to the statistical office without fear of injuring the family of the deceased and without fear of injuring his own practice. So much for a hasty sketch of some of the registration problems, problems big enough for registrars and public health workers to tackle without feeling that they are wasting their time.

But aside from the problems involving change in procedure, I am thoroughly convinced that the daily tasks of our registrars, whether state or local, constitute man-sized jobs worthy of man's best efforts.

THE REGISTRAR

A live registrar must be a man of tact, with very special knowledge of medicine and law, a man who appreciates the need of thoroughness and the importance of detail, and a man with a vast reservoir of ingenuity and common sense to enable him to cope successfully with the problems of each day. The ambitious registrar of a state not in the Registration Area first endeavors to secure a good registration law, then he puts forth every effort to secure at least 90 per cent of his births and deaths in order to enter the Registration Area, and finally he attempts to improve the accuracy of the basic data on the certificate—such items as color, age, sex, residence, occupation, and cause of death.

There is no short cut to complete registration and to perfect the basic data; the state registrar must depend largely on the faithfulness and the energy of the local registrars to get a birth certificate for every birth and a death certificate for every death; the registrar must depend largely on the faithfulness, the energy, and the scientific knowledge of physicians for accurate certification of causes of death; and he must depend largely on the members of interested families for accurate personal particulars. There is no magic wand to insure immediate perfection along all these lines. Gradual improvement is the only road to travel and progress along this road can only be attained by constantly showing registrars, physicians, and the people generally that they are important cogs in the vital statistics wheel of progress.

It is not necessary to go into detail regarding the thousand and one problems which must be met and solved by registration officials; many of you are registrars and know what the difficulties are and the rest of you have some idea. Can you picture a live registrar as anything but busy? Can you picture him with a great amount of time on his hands? May it not, therefore, be too much to expect him to specialize in higher mathematics?

If he has a bent in that direction he will undoubtedly be interested and may find time to delve into some of the mathematical problems and build little towers upon his own registration foundation, but his first duty (and his first duty may be so great that it becomes his only duty) is to build and keep in repair his registration system. He is primarily a foundation builder. If he has time to spare from this main job he may decide that he can best increase his capacity for effective work by studying mathematics or he may just as honestly decide that he can accomplish more by increasing his medical or his legal knowledge, or that he can accomplish more by getting into closer personal touch with certain registration problems in this or that part of his district. In every case the question is a personal one; the registrar himself must weigh the matter from all sides and make his own decision. Indeed, a series of such decisions may properly lead in almost as many different directions as there are registrars. It is not for any one to say that all registrars should devote more time to legal medicine, or more time to sociology, or more time to mathematics.

The best results will be obtained if each registrar will regard himself as a foundation builder and will perfect himself primarily for registration work in whatever direction his own common sense may indicate. Moreover, it is just as unreasonable to expect a registrar to excel in every branch of registration work as it is to expect a physician to be a specialist in every branch of medicine. If, therefore, we are to derive the greatest good from the courses in mathematics, which in recent years have been offered to registrars and others, we will look upon them not as absolute essentials for every registrar, but as new desirables to be considered along with the old desirables when a choice is to be made. Such a point of view does not mean that these courses in mathematics are not excellent. Such a point of view simply means that some men, having perhaps special bents in other directions, may properly conclude that they can accomplish more if they turn their surplus energies in those directions.

This point of view seems so obvious that it needs only to be stated, but last year a little uneasiness was detected on the part of registrars. In some cases they were perhaps made to feel that they were devoting themselves to unimportant work and should be spending their time in the study of mathematics.

Granting that the mathematical side is important, the Vital Statistics Section should be most careful to make clear that it recognizes as equally important the ground work given by a four-year medical course, the ground work given by hospital experience, by private practice, by the study of legal medicine, by the study of sociology, etc.

Not only should there be a thorough early training of this kind, but training must be continued. For example, the live health officer and registration official must keep up with medical progress so that he can discuss intelligently with physicians and others the certification of causes of death.

The Vital Statistics Section should stress the point that the man who would fit himself as a competent registrar should not confine himself to mathematics, but should acquire as broad a training as possible, medical, sociological, mathematical, etc. Every medical man knows that it is absolutely impossible for a physician to learn all there is to learn in all the branches of medicine—life is too short for that. The result is that we have general practitioners and we have specialists.

Now the mass of varied details which burdens every registration official must of necessity force him into the rôle of the general practitioner. He cannot devote his entire time to any specialty. He must primarily be a man of breadth and a man of common sense. If special problems arise which require knowledge beyond

his own, he must, like the general practitioner, recognize his own limitations and call upon the specialist—whether it be a specialist in medicine, mathematics, sociology, law, epidemiology, or a specialist in some other line.

In a word, therefore, the Vital Statistics Section of the American Public Health Association would render a much greater service by emphasizing this point of view than stressing the mathematical side of vital statistics training.

Moreover, every registrar should appreciate first of all the great importance of his foundation work in securing dependable basic data and I appeal particularly to the expert mathematicians to support the contention that valuable mathematical deductions depend on reliable basic data.

As registration is the foundation of vital statistics, it stands to reason that this Vital Statistics Section of the American Public Health Association, regardless of any new activities undertaken, should always continue to serve as a clearing house for the full discussion of registration problems.

REGISTRATION AFFAIRS*

THE SLOGAN "Every State in the Registration Area before 1930" is still with us. Since our last meeting in Detroit 3 states, North Dakota, West Virginia and Alabama, have been admitted to the death registration area, making 41 states in all or 91.6 per cent of the population of the United States. During the same year the birth registration area has gained the states of North Dakota and West Virginia but unfortunately has temporarily lost South Carolina. The number of states now included in the birth registration area is 33, representing 75.9 per cent of the population of the United States. Arizona has recently enacted the "Model Law" and will doubtless soon be ready for admission to the area.

For the benefit of any who are ready to help complete the Registration Areas but are in doubt regarding proper lines of action, there is given the following brief list of a few of the many possible activities:

1. Sell the idea of better registration of births and deaths to every medical organization in the state.
2. Sell the idea of better registration of births and deaths to the boards of trade.
3. Sell the idea of better registration of births and deaths to the governors, the United States senators, the members of Congress, the members of the state legislatures, the members of mothers' clubs, the local political leaders, etc., etc.
4. Publish magazine and newspaper articles.
5. Display in post offices brightly colored posters regarding the value of registration.
6. Distribute pamphlets and leaflets bearing on the subject.
7. Send to every recent mother an attractive certificate to the effect that the birth of her child has been registered.
8. Display brightly colored maps of the birth and death registration areas.
9. Make frequent tests of birth registration and publish the results by counties in order to arouse a spirit of rivalry.

Some of these activities can be best carried on through the mails, others by personal interviews, and still others by public addresses.

Active campaigns are needed in all the states not in the area to arouse public opinion sufficiently to insure in some the enactment of better laws and in others the enforcement of existing laws. The inclusion of every state in the Registration Area within a few years can only be accomplished through the earnest cooperative efforts of the many.

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* Report of the Committee on Registration Affairs, presented to the Vital Statistics Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Missouri, October 19, 1925.

SHOULD THE HEALTH EXAMINATION BE A SCREENING OR A DIAGNOSIS?*

MERRILL E. CHAMPION, M.D., Fellow A.P.H.A.
Director Division of Hygiene, Massachusetts Department of Public Health, Boston, Mass.

IT SHOULD BE appreciated at the outset that the subject of this paper is intended to embody contrasting ideas. Screening is apparently a word not in general use and diagnosis in this sense has to be qualified somewhat, so that our first task is to make clear what is meant by these terms "screening" and "diagnosis."

Screening. For the purposes of this paper this term will be understood to refer to the sort of physical examination of the child which will recognize deviations from the normal but which will not result in a final diagnosis.

Diagnosis. This would contemplate carrying the screening process some steps further and would necessitate the sort of examination usually given by a pediatrician to a child coming to his office for the first time.

Factors Involved. Several factors come to mind at once which must be taken into consideration when dealing with the public schools. One has to do with the obligation the school assumes with regard to the health of the child when it insists upon compulsory attendance at school. Another must deal with possible expenditures for medical service; another with public opinion concerning school examinations; another with the available supply of qualified physicians.

It will be evident that we are here dealing with two kinds of factors, factors which are to be reckoned with in all forms of public activity. The one has to do with principles underlying governmental action and the other with matters of expediency. Perhaps we had better deal with the latter idea first.

EXPEDIENCY AS APPLIED TO SCHOOL EXAMINATIONS

Expediency, in this connection, has to do with

1. The number of available physicians
2. The qualifications of available physicians
3. The amount of money the municipality can or is willing to spend on this kind of service
4. Public opinion in the community and its relationship to thorough school physical examinations

Let us examine each of these in turn.

Number of available physicians. One might be accused of jesting if he were to speak of an insufficiency of physicians, especially in the cities. As a matter of fact, however, it is quite possible for a school committee to find difficulty in getting the right sort of school physicians—men who will give adequate service for the amount of money available. In the smaller communities it may be difficult to find a school physician at all. This difficulty could probably be remedied in time if small communities were to combine in the employment of a qualified whole-time school physician; they are still far from this, however.

Qualifications of available physicians. Not every physician is qualified to become a good school physician. Many physicians know little of pediatrics; are not interested in children; and are not

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willing to give definite hours each day to school work.

Amount of money available. Most communities spend far too little on medical supervision of the school child. The average sum paid school physicians in Massachusetts, where we have had compulsory school inspection for nineteen years, is $300. Some communities pay as little as $25 a year. Under such conditions it is only too easy for the physician to look on the job as a sort of perquisite calling for very little return. School superintendents are getting increasingly restive over this state of affairs, which is a hopeful sign.

Public opinion. Public opinion is not yet entirely behind school medical supervision. There are some who think it an expensive fad; others who oppose it because of a fanatical fear of everything medical; and others who do not want their children subjected to a physical examination by any but the family physician. This latter group can usually be converted by inviting them to be present at the school examination.

The factor of expediency, then, is on the side of the type of examination we have referred to as "screening." This takes less time and fewer physicians than diagnosis would take; it costs less; it calls for fewer qualifications on the part of the examining physician; and it arouses less hostility on the part of families and family physicians.

PRINCIPLES OF GOVERNMENTAL ACTION AS APPLIED TO SCHOOL MEDICAL SUPERVISION

The writer feels that this should be the final touchstone. It is proper then to ask: Just what is the obligation of the organized community with respect to the school child? What is the line beyond which it may not go without taking from the individual family physician not only its right but its duty of minding its own business? In order to decide this we should be mindful of the more modern ideas regarding the interdependence of members of the large group of families making up the 20th century community; and at the same time we should be careful to avoid the mawkish sentimentality which so often at the present time obscures the hard facts of daily life.

Communicable Disease Control. One fact stands out first of all. By demanding that all children attend school, we take upon ourselves as a community the responsibility of seeing that we do not thereby endanger the health of the children. We certainly do endanger their health if not their lives unless we safeguard them so far as is possible against the spread of communicable disease through contact in school.

It would seem then that as a first step we may say that it is proper and wise to expend municipal funds for the purpose of medical supervision of the school child in order to control the incidence of communicable disease. This, however, involves only daily inspection of pupils by teacher and nurse, with assistance from the school physician in suspicious cases, so that the patient may be transferred as soon as possible to his home where he will have the care of the family physician and be under the supervision of the board of health if the family physician makes a diagnosis of communicable disease. The school authorities' part must surely be described as a screening process.

Sight and Hearing and General Health Examination. Many if not most school laws include a provision for the examination of sight and hearing of the pupils, usually conducted by the school teachers. This, too, is merely a screening process.

We come now to the physical examination or inspection. This is

1. A simple inspection, often only of skin, throat and teeth, and not involving the removal of any clothing
2. A more careful examination involving exposure of the chest and including eyes, ears, nose, teeth, throat, skin, glands, heart, lungs, nutrition, posture, and general orthopedic defects. The examination is carried only far enough to establish the presumption of health or disease; if the latter, the child is then referred to the family physician for further attention. This, too, is a kind of screening process.

Diagnosis. The other kind of examination is of the sort usually given by a pediatrician to a child coming to his office for the first time. In this class would probably be included examinations of underweight school children by tuberculosis experts for the detection of hilum tuberculosis.

No one would dispute for a moment that this is the sort of examination which every child ought to get at more or less regular intervals, from some source or other. But should this source be the school?

Let us take first the problem of hilum tuberculosis since that is coming into the foreground at the present time, as it deals with the early stage of a communicable disease and may be said to involve both screening and diagnosis. Hilum tuberculosis occurs chiefly between the ages of 6 and 12 years, so that it is primarily a school problem. It can be authoritatively recognized by but few persons at the present time. The diagnosis involves the use of the Von Pirquet test and the X-ray, obviously not the usual equipment of a school building.

It is pretty evident that so far as the diagnosis of hilum tuberculosis is concerned the school examination can serve only as a screening process. The school nurse or school teacher may pick out the underweights—the group in which cases of hilum tuberculosis chiefly occur—and the school physician may become sufficiently expert to warrant his making a tentative diagnosis of hilum tuberculosis. Reference then is in order to some other agency for final diagnosis and action.

Let us take one more example involving diagnosis. Suppose the school physician's examination raises in his mind the suspicion that the child is suffering from some kind of cardiac affection. Should the physician at once refer the child to his family physician for final diagnosis or should he feel under obligation to carry it through to a finish himself? The writer would say that the obligation of the school stopped with the recognition of the need of further study of the case; that further determination and any corrective measures resulting therefrom are the responsibility of the family and the family physician.

The Answer to Our Question. We have come to the point now where we can categorically answer the question contained in the title of this paper. The school examination should be a screening and not a diagnosis.

SUMMARY

1. The answer to the question "Should the Health Examination be a Screening or a Diagnosis?" involves two factors (1) expediency and (2) the principle of governmental responsibility for the health of the school child.

2. Expediency is all on the side of screening, since the latter costs less, demands less of the school physician in time and skill, and in most instances arouses less opposition on the part of the parents of the children.

3. Screening is in accord with the fundamental principles underlying a sound system of governmental responsibility for the health of the school child. The community by demanding that the child attend school obligates itself to see that the child does not run unnecessary health hazards in meeting the community's demands. This obligation can be met by providing the child with a sanitary school building, reasonable hours of study, protection against communicable disease, instruction in health habit promotion, and finally enough physical and mental health supervision to give the parents warning of the need of further attention to the child.

Sound governmental policy demands that the parental responsibility for the health of the chlid be not lessened or obscured by any measures employed by the school.

A BRIEF REVIEW OF VITAL STATISTICS*

EDGAR SYDENSTRICKER, Fellow A.P.H.A.
Statistician, United States Public Health Service, Washington, D. C.

IT IS PROPOSED in this brief review to point only to certain developments in the data of vital statistics, in statistical technique, and in the application of statistical methods, which appear to be of more than usual significance in the field of public health during the past year. The current facts as revealed in the flow of statistical records are already known or will soon be made known to you by interpreters who are specialists in their several fields.

We may refer, in the first place, to the developments in the *data* of vital statistics, in the quantity and quality of records of natality, mortality, and of the incidence of disease.

EXTENSION OF REGISTRATION AREAS

The continued extension of the birth and death registration areas in the United States is distinctly encouraging. Dr. Davis, our chief statistician for vital statistics, reports† that since our last meeting 3 new states have been admitted to the death registration area, making 41 states in all, and that the birth registration area has made a net gain of one state, so that now 33 states are included.

The publication of more detailed mortality and natality tables by the Census Bureau, as well as of a complete manual on the joint causes of death, are important steps forward. Any abridgment of these basic tables, such as has been threatened on the grounds of supposed economy, would be a serious retrograde step. The public health statesman, indeed the economic and political statesman, needs not fewer but more facts upon which he can determine the policies relating to the well-being of the people.

IMPROVEMENTS IN REPORTING

The notable improvement in statistics of notifiable diseases of the past few years has continued. Not only are communicable diseases reported more promptly, completely, and intelligently, but a new principle appears to have been introduced with success. We refer especially to the system introduced in Virginia by Dr. Williams and Dr. Freeman and in Mississippi by Dr. Leathers, later revised and put into operation in Alabama by Dr. Maxcy, and now being considered and adopted in several other states, which is based upon a very simple current summary from every practicing physician of new cases of notifiable diseases for epidemiological and statistical purposes. It is in some such system that we shall find a practicable basis for the long discussed "morbidity registration area." For few diseases may we hope, in the measurable future at least, complete statistics in all areas, but for all diseases in which the statistician and epidemiologist are concerned we *can* hope for complete statistics of cases that are observed by practicing physicians and by others who come into contact with the cases in a routine manner. And if we know that in various areas 90 or 95 per cent of these observers regularly report the new cases, and if we know the ratios of physicians to population in these areas, we have some of the essential elements of comparability.

* Read at the First General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.
† *A. J. P. H.*, Dec., 1925.

CONTRIBUTING SOURCES

We are being enriched by accumulating contributions to mortality and morbidity data from other than strictly official sources. The detailed mortality experience given to the public health movement by the Metropolitan Life Insurance Company has been augmented during the past year by the experience of 4 other large industrial insurance companies, the Prudential, the John Hancock, the Colonial, and the Life Insurance Company of Virginia. The records of these 5 companies covered over 31,000,000 lives in 1924 and showed the quarterly rates for the principal causes of death. A number of large industrial establishments, in the sound endeavor to appraise the health situation among their employes, have now collected several years of sickness experience and are contributing it to the Public Health Service. Continuous records of sickness have also been made available by colleges and schools and by special studies of various population groups. Morbidity recording is, we believe, becoming established as a necessary means for observing the reactions of individuals to specific conditions and determining the occurrence and the force of influencing factors. These records of morbidity are beginning to give us what we have long needed—a picture of the disease or the *health*, rather than the *death*, situation in a population, a picture which, as it becomes more accurate in perspective and in detail and emerges in truer colors will give to the sanitarian a far more useful guide than he has ever had before. Furthermore, and not of least importance, we shall be relieved of the baneful necessity of vitiating our mortality statistics by attempting to make them serve the purpose of morbidity records.

INTERNATIONAL VITAL STATISTICS

In even so hurried a review as this, it would be seriously remiss not to refer to certain developments in international vital statistics. The establishment in the Secretariat of the League of Nations of a Service of Epidemiological Intelligence and Public Health Statistics is of peculiar interest, not merely because it was made possible by monetary grants from the International Health Board and was participated in by American individuals, but also because we are coöperating in this activity and will benefit from its success. It is fitting that we should pause to record, with deep regret, the death during the past year of one of our ablest vital statisticians while serving in a temporary capacity at Geneva, Dr. Otto R. Eichel of New York State Department of Health. The development of this Service has for the first time in the history of public health afforded the sanatarian in all countries a current view of the situation as regards epidemic diseases in the civilized world and is laying the foundation for more efficient coöperation between nations in the fight against pestilence and epidemic diseases; undoubtedly it will draw them closer together in a common effort to combat the more insidious and more serious causes of ill-health and premature death.

We cannot help but think that a very sound principle was recognized in inaugurating this intelligence work and in its development, from the point of view of the international coöperation, which may be stated crudely thus: that while it is all very well for nations through their official plenipotentiaries to sign conventions by which they agree to notify each other of the occurrence of cases of communicable diseases, before the cases actually will be notified and, in fact, before the agreement should be signed, the *habit of coöperation must be formed.* And so in choosing between the time honored procedure of finding a "formula" satisfactory to everybody and putting imposing signatures on an engrossed parchment before trying to *do* anything, and starting something first and letting everyone genuinely interested come in, the latter course was taken with, as all will now agree, a better measure of success than ever before attained.

To-day—in only two years—practically every country and colony with current records of disease incidence is actually transmitting such reports as it has to Geneva, many of them by telegraph, cable and wireless; it is only a matter of time before this information will be immediately available to all the health officers in the world. Then we shall be able to draw up and sign a convention, if it occurs to us to do so.

INTERNATIONAL COMPARABILITY

The League of Nations' Service of Epidemiological Intelligence and Public Health Statistics has boldly attacked another fundamental problem of international vital statistics among countries. It was early recognized by those responsible for its establishment that uniformity in the mere classification of causes of death among the nations by no means rendered comparable the *data* which composed the statistics. Important as the establishment of an international list of causes of death was, of far deeper import is uniformity in the manner in which the facts themselves were recorded and classified under the list.

In our own problem of 48 states, we are solving it by a mortality registration area and a central tabulation of the original records; a solution somewhat similar to this may be best among nations. But, as preliminary steps, the publication has been begun of a series of monographs on the vital statistics of each country, so that the sanitarian in any country will be able to inform himself of the procedures in other countries and thus interpret more accurately what their statistics mean.

Several committees, on which American statisticians are represented, are at work studying the procedures of the different countries on specific points, such as the treatment of joint and contributory causes of death, the dissimilarities in age groupings, the setting up of a suitable "standard million" population for international use, and an acceptable definition of stillbirth. The committee on the last named subject has made a report recently which the Council of the League of Nations has circulated among the various countries for preliminary observation and comment. While everyone realizes that this work must be slow and will at times be disheartening, it is as clearly recognized that the time has come for it to be commenced by those who are really interested and to be carried on in a scientific manner.

STATISTICAL TECHNIQUE

We have referred in such detail as the allotment of space permits to what is believed to be important developments in the collection and recording of the facts which compose the data of vital statistics. However, we must refer briefly, and of necessity in general terms, to progress and development along two other lines of perhaps even greater importance to public health.

The first of these is progress in the proper use of statistical technique. Statistical methods in the analysis of mass facts are gradually coming to be regarded as essential to their interpretation. More adequate text-books on vital statistics are appearing, and no department or school of public health is classed as competent unless it provides at least elementary training in statistical methods to all of its candidates for degrees. The use of statistical technique in reports and papers in our public health and medical journals is evident to a greater extent during the past year than ever before. It may be true that some of this technique was not fully understood by its users and may have been misapplied; on the other hand, some of the most accomplished technicians may not have fully understood the facts to which they applied their skill. Be that as it may, it is evident that on the whole our inductive reasoning has been made more scientific, more sound by the greater use of well established statistical methods; progress is being made in the application of these methods to

public health problems; we are seeing more clearly exactly what the function of the statistician in public health work is and ought to be.

This leads to the second general item of progress. The evidence relating to it is intangible and unmeasurable, and perhaps it is not a matter for a statistician to mention. It is a growing realization among those who have to deal with data in the mass that since statistics is not a science but a method, the orderly application of inductive reasoning in a given field of facts, *the basic requirement for a proper use of the statistical method is a thorough knowledge of these facts.* The realization of this is a wholesome thing. It means that the statistical analyst in public health work must be more than a pure mathematician or technician; he must first be master of the natural history of the disease he studies and be well acquainted with the biological, economic and social conditions that may be involved in its epidemiology; and, above all, his logic must be sound.

The responsibilities of the statistician are growing with a recognition of his part in public health. He no longer can be a mere compiler or juggler of figures, for he is in the company of those who search for facts, who have definite objectives in their search, who use the facts with understanding, and who look to him for an intelligently applied technique. Therein lies the most important item of progress in vital statistics that we have to record.

Commonwealth Fund Appointment of Dr. French—Dr. William H. French, Director of the Fargo Child Health Demonstration, has been appointed Director of the Commonwealth Fund Child Health Program in Austria, and completed his work in Fargo October 31. Dr. William DeKleine, Director of the Mansfield Child Health Demonstration, will assume the direction of the Fargo Demonstration in February following the termination of the Mansfield Demonstration. In the interim between the departure of Dr. French and the arrival of Dr. DeKleine, Dr. Lester J. Evans, Director of Medical Service in the Fargo Demonstration, is to serve as Acting Director of the Demonstration.

Committee Appoints Dr. Royer—The National Committee for the Prevention of Blindness announces the appointment of Dr. B. Franklin Royer as Medical Director to the Committee. A large part of Dr. Royer's time will be spent in working in close coöperation with the Committee of State and Provincial Health Authorities of North America appointed at the June meeting.

Honorary Dinner to Dr. Goler—Dr. George Washington Goler, Health Officer of Rochester, is to be signally honored on December 8. The Monroe County Medical Association is tendering an honorary dinner to Dr. Goler on his completion of 27 years as Health Officer in the city of Rochester.

During his incumbency as health officer Dr. Goler has made many valuable contributions to epidemiology and public health in Rochester. Among the outstanding contributions is the supervision of production and distribution of all milk. The death rate has dropped from 3.07 per 1,000 children under 5 years of age in 1900 to 1.57 in 1924. The general death rate has dropped from 16.73 in 1884 to 10.56 in 1924.

It is largely through the efforts of Dr. Goler that Rochester in 1926 will have a beautiful new Municipal Hospital which will coöperate directly with the new Medical School.

Short School—The Texas Section of the Southwest Water Works Association will hold its eighth annual short school for water plant operators at Fort Worth, Texas, the week beginning January 18, 1926.

EDITORIAL SECTION

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RELIGION, PSEUDO-RELIGION, SCIENCE AND PUBLIC HEALTH

ADVANCES in medical science, both in the treatment of disease and in its prevention, have gone hand in hand with discoveries in other branches of pure science, and in many cases have depended upon some of the other sciences. Salvarsan, insulin, etc., have been the combined products of chemistry and biology. Our knowledge of insect-borne diseases has come largely from biological studies, and their prevention combines physics, engineering, botany and chemistry. Parasitism in general has been largely a biological study, though again chemistry and physical chemistry have given much aid. The spread of many diseases seems to depend upon climatological factors in which physics plays a large part. Instances of the interdependence of one science upon another could be multiplied indefinitely. It is clear, therefore, that the blocking of investigations in any one line of science will eventually reflect injuriously on others.

Sir Arthur Keith, more than any other, has shown us that many of the weaknesses of the human body have come about through the assumption by man of the erect posture. We have more than mere intimations that the susceptibility to some diseases, or, what is the same thing in other words, resistance to some diseases, is largely influenced by race, and races have acquired their peculiarities through their origin and life history. "Constitution is that aggregate of hereditarial characters, influenced more or less by environment, which determines the individual's reaction, successful or unsuccessful, to the stress of environment." There is a distinct trend towards the study of origins at the present time, and a belief that valuable knowledge in the prevention of disease will be gained by such studies. Those interested in public health and in the biological aspects of diseases, and resistance to diseases, must stand as a unit against anything which will prevent free research and free publication of the results of research.

Most medical historians do not stress particularly the influence of Christianity on medicine. While hospitals existed before the Christian era and in pagan countries before Christianity was ever preached in them, there can be no doubt that the teaching of Christianity led to a more humane view of sickness, to a greater care of the sick and poor, and to an increase in relief by means of hospitals and similar institutions. On the other hand, the idea that disease, and especially epidemic disease, was sent as a punishment for sin was tremendously fostered, and some of the early church bishops taught their followers that seeking relief from

disease through earthly means was an act of impiety. The early church opposed the study of natural science.

The condition of things in the Dark Ages of medicine is too well known to need discussion. Greece had led the way towards an era of enlightenment which is even today the admiration of the world, but in spite of this, the teachings of the Hippocratic school were lost sight of. Intellectual degradation became ascendant; medicine lost its scientific character and became barbarized through the creeping in of folklore; and the world at this time turned from science to quackery, charms, magic, visits to shrines, superstitions, and all sorts of primitive ideas such as are found among savages. The progress of medical science since the days of Pasteur does not need to be recounted here, but we may well ask if our triumphs are permanent and if we are free from the dangers of relapse. Whatever evolution has done to the human body, there is not much evidence that it has improved the human mind or human tendencies within historic times. In spite of the wonders of modern surgery, of electrical appliances such as the radio, the discovery of new elements like radium, of synthetic chemistry, and many others, all of which have been made through the use of our five senses, and the correlation of the knowledge thus gained, there are thousands of people who deny the existence of things made evident through these senses, and millions who are ready to follow the most preposterous ideas which have no foundation on scientific facts, observation, or reason. Never in the history of the world has there been a time when people were more ready to run after quackery in medicine, and the very wonders of discoveries such as the radio make many otherwise rational people inclined to believe such preposterous statements as are put out by various cults, such as "New Thought," and the "E. R. A."

These ideas, in which there is nothing new, have been brought to the front by a remarkable sermon given by the Bishop of Birmingham before the British Medical Association at its annual meeting, in which he warns against faith healers and charlatan psycho-analysts. He points out that true religion and medicine are subject to the same pressure of irrational belief, and quotes Sir Clifford Allbutt as saying that "When superstition attacks religion it also attacks medicine," though he believes that religion is the first to feel the effects of an uprush of intellectual barbarism. This is due to the emotional element which is found in true religion. It is difficult to apply reason successfully to the spiritual valuation of human life and religious extravagance easily follows such attempts. The temper of superstition, which is intolerant of accurate reasoning, manifests itself in religion and then in scientific medicine, since that is the science most closely concerned with ordinary life. We all recognize the influence of the mind upon the body, but there are so many facts which are obscure, that many opportunities arise for irrational theories, and often when the doctor fails, thinly veiled magic may succeed. "When once the idea gains sway that the universe is non-rational for human thought, when once men set aside God's gift of reason, then scientific progress is doomed."

Why does superstition make a stronger appeal today than it did a half century ago? Why do men and women leave scientific medicine and go to charlatans? The scientific mind which trusts in reason is a recent acquisition—as compared with the antiquity of the race—born but yesterday; its place in our mental make up is insecure; it is exacting and mankind is mentally lazy. The recent trial in Tennessee, the suit brought in the District of Columbia, the statements of the fundamentalists, all show that our liberties are in danger. Public health cannot

survive the death or the suppression of the fundamental sciences. It has been plainly shown that even in a court of justice the scientists will not be allowed to have their say and to present the irrefutable evidence on which their beliefs are founded.

Public health officials, especially if they are also practitioners of medicine, come into contact with large numbers of people. Each individual should be a missionary. He should be well posted on current literature—such books, for example, as have been written by Osborn in this country and Thompson in England. People are anxious to know and to learn, but magic appeals to the average mind more than does reason. Let us stress the wonders of medicine. Is there any romance more full of holding interest than the discovery of the malarial parasite, the discovery of the agency of the mosquito in carrying yellow fever, the cleaning up of the Isthmus of Panama, and the making habitable of tropical countries in which the white man had never been able to live? Does romance offer anything more thrilling than the search for quinine, or the plant which gives chaulmoogra oil? Is there anything in fiction as marvelous as the relation between the mosquito and the parasites of malaria and yellow fever? Do we ourselves appreciate these things, and if so, are we familiar enough with the story to tell it in an interesting way to laymen?

FORMALINIZED DIPHTHERIA TOXOID (ANATOXIN)

ACTIVE immunization against diphtheria with toxin-antitoxin had its origin in the injection of horses with this mixture for the production of antitoxin. Toxin-antitoxin has been used now on an extensive scale throughout the world for the immunization of human beings. Overneutralized, neutral and underneutralized or slightly toxic mixtures have been recommended by different observers, but the best results in this country have been obtained with the underneutralized or slightly toxic preparation. It was noted by Zingher that though some of these mixtures, on standing, practically lost their toxicity, yet they retained their full immunizing value. The excess of toxin in the mixture, changed into the non-toxic modification or toxoid, was still capable of acting as an antigenic agent in stimulating the tissue cells to produce antitoxin. Similar observations were made by Park and Schroeder on the immunizing value of diluted diphtheria toxin, in which most of the toxin was changed into toxoid on standing.

In 1905, Loewenstein successfully produced tetanus antitoxin in horses by injecting them with a non-toxic preparation of tetanus toxin. This was made by the addition of a small amount of formalin to the toxin and by exposing it to incubator temperature for several weeks. He was not successful when he tried to use formalinized diphtheria toxin. Later Glenny of the Burroughs-Wellcome Laboratories was able to produce diphtheria antitoxin by injecting his horses with diphtheria toxin which had been treated with formalin.

In 1922, Ramon commenced a systematic study with diphtheria toxin which had been made non-toxic by the addition of 0.3 to 0.4 per cent formalin and by exposure to incubator temperature for one month. The results in a large number of horses injected for antitoxin production were very good, many of the animals showing from 800 to 1,000 units of antitoxin in each cubic centimeter of blood serum, the average in over 100 horses being 500 units. The modified toxin, similar to the modified tetanus toxin of Loewenstein, was designated by Ramon

"anatoxin." It had properties, such as resistance to heating, that distinguished it from simple toxoid originating from toxin by standing. In France a number of clinicians, notably Zoeller; Darre, Loiseau and Lafaille; Lereboullet and Jeannon; used the anatoxin in children and adults, and claimed that 2 doses of 0.5 c.c. and 1.0 c.c. given 3 weeks apart, fully immunized 95 to 100 per cent of the injected persons.

Zingher in New York City has injected over 500 school children with the anatoxin sent him by Ramon. The Schick retest on 282 children made 6–8 weeks after the injections, showed that 88 per cent had become immune after 2 injections and 98 per cent after 3 injections of the anatoxin. The local reactions after the injections of the anatoxin were slight and compared favorably with the reactions after the toxin-antitoxin, which was injected into one-half of the children in the same schools for purposes of control. With preparations of toxoid made at the Research Laboratory, the results were not so good at first when he used only small doses. With larger doses, however, *i.e.*, 3 doses of 1 c.c. of one of these preparations of toxoid he was also able to immunize 98 per cent of the children.

Diphtheria toxoid (anatoxin) should be prepared as Ramon recommends from toxin made with Martin broth. Toxin produced with this broth has a high L+ value, as seen in its combining value for antitoxin and the flocculation test of Ramon.

Moloney has recently stated that the addition of phenol as a preservative to the toxin before its treatment with formalin markedly diminished the immunizing value of the preparation. It is interesting to note that Ramon adds no phenol or any other preservative to the anatoxin, but depends on the formalin itself as a preservative.

The distinct advantages of toxoid (anatoxin) over toxin-antitoxin are its non-toxicity and the absence of danger of dissociation by freezing, as was the case with a preparation of toxin-antitoxin used in Massachusetts last year. This danger, however, is not present in the new 1/10 L+ mixture of toxin-antitoxin. If the time for compulsory immunization against diphtheria should ever arrive, an absolutely non-toxic but efficient antigenic preparation would be desirable, and one from which the word antitoxin is preferably omitted. Diphtheria toxoid (anatoxin) answers these requirements. There is only one disadvantage to toxoid (anatoxin) as compared with the new 1/10 L+ mixture of toxin-antitoxin. It contains more of the irritating protein than the latter, and this is likely to give rise to somewhat more marked local reactions in those who are especially susceptible to it, *i.e.*, adults. This disadvantage will probably be ultimately overcome by purification of the toxin. For children, especially of preschool age, this objection does not hold true. For them, therefore, the non-toxic toxoid (anatoxin) seems preferable to the toxic mixtures of toxin-antitoxin. While further work remains to be done with toxoid (anatoxin) to give it a background which toxin-antitoxin enjoys today, yet on account of its advantages it seems destined to replace the latter in the active immunization of children against diphtheria.

VACCINIA AND VARIOLA[1]

ONE of the dark spots in the history of bacteriology has been our inability to demonstrate the active agents in many of the most common contagious diseases. In spite of the enormous amount of material at hand year in and year

out in every part of the world, we have not yet advanced greatly in our knowledge of smallpox or of vaccinia, and the active agents or agent of these viruses is still undiscovered. Practically we have learned a great deal, but there has been no foundation for our knowledge except experience. The work of Dr. Gordon is, therefore, of unusual interest and value. He has not followed the usual methods of bacteriological examination nor tried to stain or photograph the organism, but has depended entirely on experimental animals. He seems to have devised a successful method for measuring the size of dosage and to have obtained some accurate knowledge of the properties of the serum of immunized animals by quantitative serological methods. Agglutination and complement fixation tests have been applied and have demonstrated the relationship between these infections, as well as having clinched the proof that alastrim is only a modified form of smallpox.

By injecting raw vaccinia virus, or virus heated for 30 minutes to 55° C., he succeeded in producing in rabbits specific antibodies—those which effect complement fixation—agglutins, and lysins, and these antibodies are specific to the viruses of vaccinia and variola. This immune serum will immunize passively against vaccinia virus, and resembles in its behavior the antibacterial sera in that the complement fixing and agglutination titres do not necessarily indicate its protective power. The virus of vaccinia is affected by gravity and may be thrown down to the bottom of the tube by centrifuging. Passage through Berkefeld filters took away from the virus all of the properties which had been demonstrated, though in later experiments a portion of the virus passed the filter, so it appears that under certain circumstances the virus is filterable, but the conclusion that the virus is particulate in character is evident. Dr. Gordon used the skin of shaved rabbits as an indicator for the presence of the virus. This test is extremely delicate, more so than the serological test, and it enabled him to detect great differences in the specimens of calf lymph supplied from different sources. The great variation is shown by the fact that some lymphs were active when diluted 1 in 100,000 while others when diluted only 1 in 10. By cross protection experiments it was found that the immunizing action of the various strains was identical.

The susceptibility of the nasal mucous membrane of the rabbit was one of the most interesting features. Under natural conditions the normal nasal mucous membrane is far the most susceptible and permeable of any tissue to vaccine virus, though it does penetrate the conjunctiva and the external auditory canal. When applied to the normal nasal membrane, after a period of incubation of 6 to 8 days, rabbits developed an acute nasal catarrh, indistinguishable in appearance from that of acute cold in the head in human beings. The virus is plentiful in the nasal discharges, especially in the early stage of the disease. These findings led Dr. Gordon to raise the question as to whether the chief natural mode of spread of this disease is not through the respiratory tract rather than by cutaneous inoculation, as has been believed heretofore. He considers that vaccinia is linked with the group of influenza and acute nasal catarrhs. This is especially interesting in view of the fact that we have so long believed that smallpox was contracted through the upper respiratory tract, and the ancient custom of the Chinese was to inoculate with a small portion of smallpox scab placed in the nostril.

The effect of heat in lessening the activity of vaccinia virus has long been known. Exposure for 30 minutes to 55° C. reduces the living virus more than 99 per cent, though in strong suspensions some living virus still remains. As pointed out, heated virus will produce an excellent degree of immunity in rabbits, such rabbits being successfully protected against more than 1,000 minimal vaccinal

doses of virus. Temperature higher than 55° C. materially reduces the prophylactic power. Among the antiseptics, permanganate of potash possesses exceptional power to destroy virus, being even more powerful than bichloride of mercury.

The study of smallpox virus and alastrim in monkeys is very interesting. The viruses from alastrim and confluent smallpox are both inactivated by exposure to 55° C. for one-half hour, and destroyed by a solution of permanganate of potash 1 in 10,000. Neither of the viruses affected rabbits but both gave positive results in monkeys, the disease produced by smallpox virus being more severe than that caused by the virus of alastrim. The virus of vaccinia protected the monkey against both forms and the action was reciprocal. The degree of protection afforded by smallpox virus against vaccinia was inferior to that afforded by vaccinia against smallpox, and neither of the viruses gave marked protection to the rabbit against vaccinia.

None of the tests applied by Dr. Gordon showed any difference between virus of alastrim and confluent smallpox, except in regard to virulence for the monkey. The report calls attention to the fact that Jenner held that mild and severe smallpox were one and the same disease. While alastrim is apt to breed true, it can be positively stated that it is one and the same disease with smallpox, differing only in virulence.

1. Gordon, M. H. Studies of the Viruses of Vaccinia and Variola. Medical Research Council, *Special Report Series. No. 98.* H. M. Stationery Office, London, 1925.

SANITATION A GOOD INVESTMENT

THE LANCET (London) calls attention to some points, not usually recognized, which show what a good investment sanitation is. The strict inspection of vessels passing through the Panama Canal has had a marked educational effect on the neighboring ports, and shipmasters, who fear detention by quarantine. The ports are cleaned up and shipmasters ask for rat destruction. Apart from their being carriers of disease, the shipmasters have learned the comfort of being without rats and vermin.

Sir Malcolm Watson has calculated that in Malaya certain estates employing 29,068 coolies have, through malaria prevention, saved 114,000 pounds (normally $552,000) or almost $20.00 per laborer. Applied to rubber production, it is a saving of 4 cents on the pound, and with an average of 10 pounds of rubber in the average automobile tire this saving amounts to $2.00 for the five tires usually carried. It is seen, therefore, that automobile owners and all who use rubber in any form are directly affected by malaria prevention, which is the greatest single cause of disease in the producing countries, though sanitation of every kind is known by physicians and sanitarians to pay handsome dividends. The campaign of education showing such facts to the public has already brought rich results and should be continued vigorously.

ASSOCIATION NEWS

REPORT OF THE EXECUTIVE SECRETARY TO THE GOVERNING COUNCIL

INSTEAD of tiring you with a long narrative report, I have put the facts regarding our chief activities on 4 charts which are in your hands. These present briefly much information. The data here have many implications with regard to our work and deserve study at your leisure. If there are matters which are not clear in these charts or any points which you would like to have explained, I would be very happy to answer your questions. In general the figures are given as of September 30 of this year, although the financial figures are for the 12 months closing August 31. These dates were used because they represent the period immediately following the period reported on last year at this time. In the case of membership and circulation reports, I have included data from previous years for the sake of comparison, since these are the least satisfactory of our activities, and because I shall dwell on these matters in some detail.

With respect to the other data presented, a brief reference to last year's figures will show satisfactory progress. Our income for the 12 months period ending August 31 has been increased by $4,919 over the similar period last year. Our surplus, which represents the excess of assets over liabilities, is now $14,859. This is $11,301 greater than it was a year ago.

The book service continues to show a small but regular gain. Our business in this department was about $1,000 greater this year than it was last year, which means that this service to the members has now reached a point where it is self-supporting.

The JOURNAL circulation, though but slightly increased (154 copies) shows a much better record in paid up subscriptions.

The revenue from advertising has been increased by $1,434 in one year, and this taken with the gains made last year, represents an increase of almost 50 per cent over the advertising revenue of two years ago.

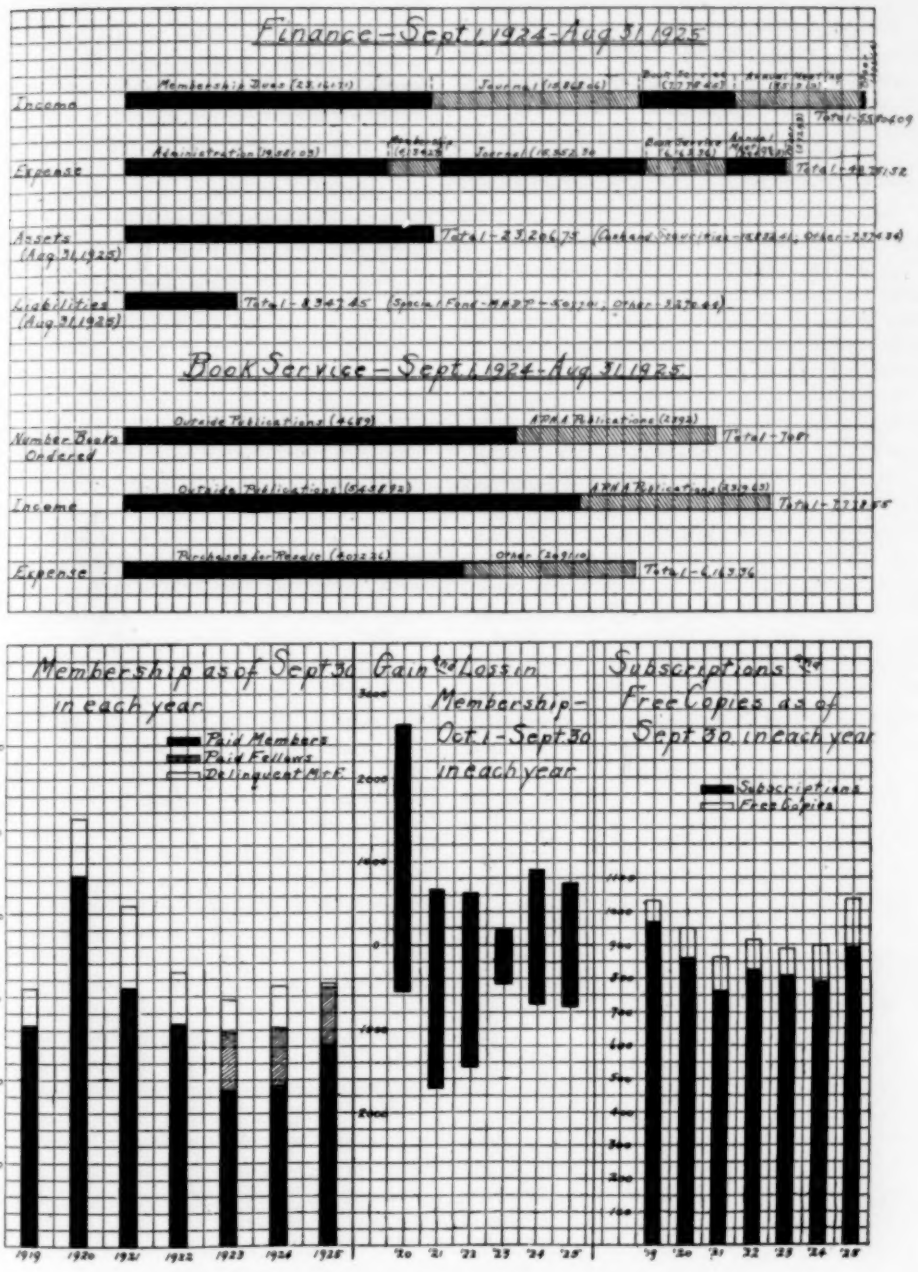
This concludes my remarks with respect to the data on the charts. I will be glad to explain in further detail any point not clear to you.

Many of the activities of the executive office do not lend themselves to convenient graphic presentation. These may be summarized in a few words.

In January, 1925, Mr. E. H. Boerth was appointed Assistant Secretary of the Association. Mr. Boerth has had direct charge of the Employment and Information Services and has assisted with the editing of the JOURNAL, particularly in the preparation of the annotated bibliography, and in general has acted for the Secretary in his absence. The Employment Service has shown a slight increase in activity this year, though it is still not realized by many that the Association maintains an employment service for its members, separate and distinct from the position and help wanted advertisements in the JOURNAL.

In June, the Association moved its offices to another part of the 16th floor of the Penn Terminal Building. This gives us increased space for our developing activities and provides adequate facilities for the Field Service of the Committee on Municipal Health Department Practice. Your Secretary has coöperated with the Committee during the past year and has from time to time acted as its executive officer.

The presence of an assistant in the office has enabled your Secretary to spend more time in the field, and in May and June of this year, 6 consecutive weeks were so spent. This trip included several cities in Texas, Albuquerque, Los Angeles, San Francisco, Sacramento, Portland, Salt Lake City and Denver. During this trip, he had the opportunity to talk with many members individually and in groups, to ascertain their wishes in regard to the Association, to explain the services the Association is ready to render, and in general to recapture a waning interest on the part of members in the Middle and Far West. During this trip your Secretary represented the Association at the Annual Meetings of the Texas Medical Association,


Finance – Sept. 1, 1924 – Aug. 31, 1925
Income
Expense
Assets (Aug. 31, 1925)
Liabilities (Aug. 31, 1925)
Book Service – Sept. 1, 1924 – Aug. 31, 1925
Number Books Ordered
Outside Publications (4572)
A.P.H.A. Publications (2792)
Total – 7364
Income
Outside Publications ($4568.92)
A.P.H.A. Publications ($3179.63)
Expense
Purchases for Resale ($4032.26)
Other ($2691.10)
Total – $6723.36
Membership as of Sept. 30 in each year
Paid Members
Paid Fellows
Delinquent M. & F.
1919 1920 1921 1922 1923 1924 1925
Gain and Loss in Membership – Oct. 1 – Sept. 30 in each year
'20 '21 '22 '23 '24 '25
Subscriptions and Free Copies as of Sept. 30 in each year
Subscriptions
Free Copies
'19 '20 '21 '22 '23 '24 '25

TWO CHARTS FROM THE SECRETARY'S REPORT

The financial data in the upper chart do not include the income and expenditures of the Committee on Municipal Health Department Practice which were: Income, $10,975; Expense, $10,976.

Although the financial condition of the Association is satisfactory the lower chart shows the necessity for adding to the membership each year to offset the regular loss which is largely due to members leaving the public health field.

Associated Advertising Clubs of the World, New Mexico Public Health Workers, National Conference of Social Work, the California Conference of Social Work, and except for the last mentioned appeared on the program of these meetings. These gave a further opportunity to describe the work and aims of the Association. A number of smaller meetings were similarly participated in.

As a direct result of this trip, there has been appointed in the Association a Committee on Organization which met this morning to consider ways and means in which the Association may shape its affairs to make its relationship with health workers more intimate and its services to members more widely distributed.

In addition to the long field trip mentioned, your Secretary made several shorter trips. He attended a meeting to establish the Pennsylvania Public Health Association and later was present at its first annual meeting. Other meetings attended were: the Dedication of the Blossom Street Health Unit in Boston, the New York State Conference of Health and Social Work, the Annual Meeting of the American Association for the Advancement of Science, the Annual Meeting of the New Jersey Sanitary Association, where he spoke, and a joint meeting in New York sponsored by the American Statistical Association, and the Vital Statistics Section of the A.P.H.A.

This association with the members in the field is highly important and it is hoped that the budget for succeeding years will permit this activity to be continued and extended. Much time is spent in attending meetings of the National Health Council and other conference groups in New York. These meetings seem to be inescapable if the Association is to keep in touch with national developments and safeguard its own interests.

On the whole, it has been a year of increasing revenue and expansion of activities. We have lived well within our budget and the increase in revenue has comfortably exceeded the increase in expenditures. There is one phase of the Association's activities, however, which does not give encouragement. This is a most vital phase, namely our membership. We can report a net gain in total membership of but 24. It is true that of the total membership, there are less than 3 per cent delinquent in dues (from 1 to 3 months) and the total paid membership is greater now than it ever has been, except in 1920 and 1921 which were years of strenuous membership campaigns. The rapid falling off of membership (as shown in the chart) following these campaigns indicates that either such campaigns must be adopted as a permanent policy, which I do not recommend, or that they should not be undertaken.

The slight net gain this year has been attained only as the result of most arduous and sustained effort which brought in some 760 new and reinstated members. This effort, however, barely offsets the loss of 736 members. It gives one pause to realize that we lose about one-fifth of our members each year. There seems to be at the present time no way of avoiding a considerable proportion of this loss.

Before members are dropped from the rolls, every effort is made to ascertain the reasons for resigning or allowing membership to lapse. The answers we receive are distressingly uniform: "I am no longer in public health work"; or "I already take more magazines than I can read." The latter reason puts a twofold responsibility on us—first, to bring about a general recognition of the fact that membership in the American Public Health Association is something more than merely a subscription to another magazine, and second, to publish a magazine that is so good that no one at all interested professionally in public health work will want to neglect to read it. We have at least made progress in this direction, as indicated by the fact that resignations are no longer accompanied by the excuse that the JOURNAL does not cover the field.

I am sure that I can speak for the JOURNAL Editorial Committee when I say that it will do its utmost to improve the JOURNAL so that we will no longer lose members because they feel they do not get anything from it. The Association must, however, look in a large measure to you of the Governing Council to assist in removing the idea that Association membership means only a subscription to the JOURNAL. We have now and are rapidly developing tangible services for our members and we are beginning to differentiate more and more in our services between those who are members of the Association and those who are not.

To overcome the other principal cause of loss, namely, removal from public health work, I know of no other way than to be sure that we take in those who replace the ones that leave. Presumably every person that leaves public health work is replaced by someone else. We must bend every effort to get these men into the Association promptly, particu-

larly the young men. That this is a fertile field for solicitation is indicated by our experience.

Last May we foresaw that we would lose some six or seven hundred members, and in the effort to forestall this loss, we sent out an emergency message to each of our 600 Fellows, telling them that this loss would probably occur and asking them each to bring in one new member to offset it. The result of these 600 appeals to the group which constitutes the backbone of the Association was 90 members. Many Fellows did more than their share, bringing in three or more members. On the average, however, less than one Fellow in six responded to the call.

We cannot rest content in the fact that our books show a balance at the end of the year and that our income and activities are increasing, unless we can count in our membership a majority of the public health workers in the United States. We are far from this goal, and until we reach it we are not filling our place as the professional society of the public health workers of North America.

The executive office has been reasonably active in promoting membership. In addition to its own activities, it has coöperated with section chairmen to increase membership of the sections. It seems but little to ask of the Fellows that they should bring into the Association one member each year. If each Fellow would do this, it would almost offset the entire loss in membership, and new members secured by the active and associate members and by the activities of the executive office would each year be a clear gain.

Not only is it necessary for the Association to bestir itself in the matter of bringing in new members one at a time, but it must also consider the possibility of wholesale additions to its membership through affiliation with regional public health associations, thus creating a continental federation of professional public health bodies, uniting in one comprehensive self-governing group all those who are professionally engaged in public health work.

RESOLUTIONS

Presented by the Committee on Resolutions, Dr. Haven Emerson, Chairman, and adopted by the American Public Health Association at the Fifty-fourth Annual Meeting, St. Louis, Mo., October 19–22, 1925.

1. RESOLVED, that the American Public Health Association express its gratitude to the Governor of the State of Missouri, to the Mayor of the City of St. Louis, and to the Directors of the Departments of his administration, to the Local Committee of Arrangements and to the St. Louis Convention and Publicity Bureau for the care they severally have taken of the interest and comforts of the members attending this, the 54th Annual Meeting of the Association, and to the many friendly and hospitable people of the community of St. Louis for making our work here more profitable and our pleasures more enjoyable.

IN MEMORIAM

2. RESOLVED, that the American Public Health Association record its admiration and respect for the past services to the cause of public health given by the following members of our Association and its full appreciation of the loss sustained by the public and our profession in their deaths.

Bertha Van Houten Anthony, M.D., B.S., Elmsford, N. Y.
Ernest F. Badger, State Dept. of Health, Lansing, Mich.
Stella Becker, R.N., Decatur, Ill.
Norman Bridge, M.D., 120 Broadway, New York, N. Y.
Charles E. Bush, M.D., Cromwell, Conn.
George Burnham, Jr., 1421 Chestnut St., Philadelphia, Pa.
J. M. Diven, 18 Collins Ave., Troy, N. Y.
Barbara B. Drum, B.A., Tacoma, Wash.
John H. Dunlap, Secy., American Society of Civil Engineers, 33 West 39th St., New York, N. Y.
A. B. Farquhar, York, Pa.
John C. Foley, M.D., Washington and County Sts., Waukegan, Ill.
Walter J. Francis, 260 St. James St., Montreal, Que.
Arthur R. Green, M.D., Mount Kisco, N. Y.
Walter Humstone, 205 Wendel Ave., Pittsfield, Mass.

James M. Jackson, M.D., 1115 Avenue B, Miami, Fla.
Thomas W. Jackson, M.D., Oak Lane, Philadelphia, Pa.
Charles S. Kalb, M.D., Aberdeen, Wash.
Major Norman V. Lothian, Geneva, Switzerland.
G. H. Noxon, M.D., Darien, Conn.
Miss Garnet I. Pelton, Exec. Secy., Colorado Tuberculosis Association, Denver, Colo.
Luther M. Powers, M.D., 1022 N. Alvarado St., Los Angeles, Cal.
W. H. Rand, M.D., 1440 Clifton St., Washington, D. C.
Russell B. Sprague, M.D., Yarmouthport, Mass.
James Sprunt, LL.D., Wilmington, N. C.
Francis S. Swain, M.D., Corning, N. Y.
R. C. Sweetser, 2 Randall St., Providence, R. I.
Herbert J. Watson, Ph.D., County Bldg., Wilmington, Del.
Franklin C. Wells, M.D., Equitable Life Assurance Society, 120 Broadway, New York, N. Y.
C. H. Whiting, M.D., 114 Pearl St., Medina, N. Y.

3. WHEREAS, death has recently come to Dr. Henry Rose Carter, an honorary member of this Association and for many years an honored member of the Public Health Service, be it

RESOLVED, that this Association places on record its high appreciation and admiration of the valued services to sanitary science and epidemiology given by Dr. Carter.

AND FURTHER, that we wish to emphasize particularly his remarkable epidemiological studies in relation to malaria and yellow fever, the latter of which played an important part in the solution of the question of the transmission of yellow fever by the mosquito. His work has been of inestimable value to us and to the world and through his death we have lost a most competent adviser and officer.

4. WHEREAS, Dr. Otto Robert Eichel, Director of the Division of Vital Statistics of the New York State Department of Health, died on December 23, 1924, at Geneva, Switzerland, and

WHEREAS, Dr. Eichel for many years had been an active and earnest worker in the Vital Statistics Section of the American Public Health Association and was at the time of his death Vice-Chairman of the Section, be it

RESOLVED, that the American Public Health Association express its profound appreciation of the life and service of Dr. Eichel and its realization that in his death it has lost a most faithful friend and competent worker, and be it

RESOLVED, that the Association extend to his widow its deepest sympathy, and that the Secretary be instructed to send a copy of this resolution to Mrs. Eichel.

5. For a generation Dr. J. N. Hurty served as the administrative head of the Indiana State Health Department; for more than a third of its life history he has been a member of the American Public Health Association: he was once the President of the Association and has served in other positions of responsibility in the Association. Due to his clear vision, capacity for sensing the developments of the future, knowledge of public health, general ability, courage and patient perseverance, Indiana public health work was made a model for that of other states. He was a great, as well as highly useful, public servant. His counsel and interest have been cornerstones on which the American Public Health Association stands. He has died within the last year; therefore be it

RESOLVED, that we, the American Public Health Association, wish to record our admiration for him—our love and our gratitude. We wish this expression of appreciation of our comrade to be sent to the Indiana State Health Department, to the Governor of Indiana and to the widow and family of our friend.

6. WHEREAS, the death of George Chandler Whipple, late Professor of Sanitary Engineering at Harvard University, after thirty-six years of service in the field of public health engineering, in the United States and other countries, particularly as aquatic biologist, vital statistician, engineering practitioner, teacher and public health counsellor, has deprived this Association of a faithful and valued member, be it

RESOLVED, that the Association record its appreciation of his signal services to sanitary science and of the great loss sustained

and that further a copy of this resolution be sent to Mrs. Whipple.

7. WHEREAS, by the death of Dr. Eugene R. Kelley, Commissioner of Public Health of Massachusetts, the American Public Health Association has lost a willing worker, a wise counsellor and a sincere friend: a man of unusually simple, warm-hearted and impulsive nature who had the power so to endear himself to all that he was thought of first as a friend and only afterwards as an official, be it

RESOLVED, that the American Public Health Association give this public expression of appreciation of the services of its late fellow member, and be it further

RESOLVED, that a copy of this action of the Association be forwarded to his widow and family.

8. WHEREAS, Dr. Gardner T. Swartz was one of the most gifted sanitarians of his day, and as State Commissioner of Health of Rhode Island, he made most important contributions to the development of state laboratory service for the control of communicable disease, and,

WHEREAS, he was a pioneer in promoting visual education of the public through the use of pictures, charts, graphs and special devices, and

WHEREAS, his clarity of vision and statement with an uncompromising attitude toward makeshift solutions of public health problems marked him as a fearless leader in promoting sane public opinion based on sound scientific knowledge, and

WHEREAS, he was elected President of the Association and of the Conference of State and Provincial Health Authorities as a mark of distinction for his valued services in the cause of public health, therefore be it

RESOLVED, that the American Public Health Association record in this manner its public expression of affectionate appreciation of his contributions to the public and his profession, and that a copy of this action be sent to the Governor of the State of Rhode Island and to his family.

HOSPITALS AND HEALTH DEPARTMENTS

9. WHEREAS, the activities of hospitals and dispensaries bring them into intimate touch with the public health field, and whereas it is desirable to have the close coöperation of hospitals and dispensaries with the department of health of cities and towns, be it

RESOLVED, that the American Public Health Association express its approval of efforts made to bring about intimate coöperation between hospitals and dispensaries and departments of health.

SCHOOLROOM VENTILATION

10. WHEREAS, hundreds of thousands of dollars are wasted every year on this continent in the installation and operation of systems of school ventilation which are not only not beneficial but are positively harmful to the health of school children, and

WHEREAS, in the light of current knowledge, the supply of as large an air volume in schoolrooms as 30 cubic feet per minute, per capita, is necessarily accompanied with dangerous overheating of the schoolroom in order to avoid resulting drafts, and

WHEREAS, the use of ozone and other chemicals for treating schoolroom air has little or no scientific justification and little or no practical value, be it

RESOLVED, that the system of ventilating schoolrooms by fresh untreated outdoor air, admitted at the windows with gravity exhaust ducts for removing vitiated air from near the ceiling, is the most generally satisfactory method of school ventilation, be it

RESOLVED, that we recommend that state laws and city regulations interfering with such scientific and economical methods of school ventilation should be repealed in the interest of the public health.

MILK ORDINANCES

11. WHEREAS, there now exists a great variety of dissimilar and conflicting milk ordinances and of regulations for their enforcement, and

WHEREAS, this creates an unfortunate situation which is unfair to the producers of milk, and

WHEREAS, it leads to conflicts between the dairy industry and health departments, with resulting lack of confidence in such ordinances and regulations on the part of producers, consumers and the courts, and

WHEREAS, the public health is thereby menaced through the exercise of less care by

the producers and through decreased consumption of milk, be it

RESOLVED, that this Association go on record as favoring the creation and adoption of a simple standard milk ordinance, embodying the essential principles with regulations for their enforcement suitable for the many different sizes and types of communities to be protected, and that this be referred to the Committee on Dairy Products.

FEDERAL HEALTH CORRELATION

12. WHEREAS, public health activities are now undertaken by a number of different departments of the federal government, in accordance with existing law; and

WHEREAS, the correlation and centralization of these activities would conduce to efficiency, economy and the enhancement of national vitality; and

WHEREAS, public health is an essential feature of government and as important to national progress as the development of agriculture, commerce, labor, fiscal affairs, public works, the common defense, justice, or any other branch of public service; therefore be it

RESOLVED, that the American Public Health Association urges the more effective centralization of federal health work under the direction of a competent, trained official, who shall have the rank at least of an Assistant Secretary; and be it

RESOLVED, that such a central, unified department or arrangement shall include as many as practical of the bureaus engaged in public health and preventive medicine, but shall not include the United States Veterans' Bureau, which is a relief agency; and be it further

RESOLVED, that the President of the American Public Health Association is hereby authorized to appoint a committee of five to bring these resolutions and sentiments to the attention of President Coolidge and appropriate committees of Congress, and to cooperate with other groups who are studying or promoting federal health correlation.

LIST OF NEW MEMBERS

John B. Ahouse, M.D., New Cumberland, W. Va., County Health Officer

Henrique Autran, M.D., Rio de Janeiro, Brazil, S. A., Chief of Health Education and Publicity, Department of Public Health

Helen P. Ayer, B.S., Portland, Me., Technician, private laboratory of Dr. Mortimer Warren, M.D., Pathologist

Louise F. Bache, A.B., M.S., Syracuse, N. Y., Health and Publicity with the Syracuse Health Demonstration

Mabel P. Bacon, A.B., Ysilanti, Mich., Assistant Professor in Health Education, State Normal School

William Bierman, A.B., M.D., New York, N. Y., Medical Adviser, National Council Traveling Salesmen's Association

Louisa E. Boutelle, B.A., M.D., Indianapolis, Ind., Field Work, Child Hygiene Division, State Board of Health

Lillian J. Brownlee, B.S., Oakville, Conn. (Assoc.)

Arthur L. Bryan, M.D., Muscatine, Ia., City Health Physician

Enos B. Buchanan, B.S., Cleveland, O., Chemist and Bacteriologist, Charge of Laboratory, Cleveland Health Dept.

John Edward Burke, M.D., Schenectady, N. Y., Director of Health of Public Schools

Henry T. Burnap, M.D., Alton, Ill., Special Agent Vital Statistics Division

Lillian Bussy, B.S., New York, N. Y. (Former Supervisor of Nutrition and Open-Air School Course, State Normal School, Cortland, N. Y.)

William L. Clark, Clarksdale, Miss., Sanitation and Disease Control

Ada L. Coddington, Charleston, W. Va., Associate Director, Bureau of Venereal Diseases, State Department of Health

Frank G. Crandall, M.D., Independence, Mo., Field Agent, U.S.P.H.S. and County Health Officer

Edna A. Cropp, R.N., Tionesta, Pa., State Nurse in Forest County

James M. Dunn, M.D., Schenectady, N. Y. (Former School Physician, and Deputy City Health Officer of Schenectady)

Linn H. Enslow, B.S., New York, N. Y., Sanitary Engineer in charge of promotion and arrangements for coöperative research in sewage treatment and disposal with the Chlorine Institute

Elizabeth M. Falckemer, R.N., Cleveland, O., Director of Visiting Nurse Association

Benjamin B. Foster, M.D., Portland, Me., Chief of Venereal Disease Clinic at Portland

J. Clarence Funk, A.B., LL.B., A.M., Harrisburg, Pa., Assistant Director, Division of Venereal Diseases and Publicity Director, State Department of Health

John C. Gebhart, A.B., New York, N. Y., Director Department of Social Welfare, New York Association for Improving the Condition of the Poor

Stella L. Gerber, R.N., Matamoras, Pa., County Nurse for Pike County, Pa.

William W. Gray, M.D., St. Joseph, Mo., Health Officer

Charles J. Guild, Ph.B., Cleveland, O. (Assoc.)

Trinidad L. Gusay, M.D., Capiz, P. I., District Health Officer

A. Eugene Hardy, D.V.M., Charleston, W. Va., Director of Food and Sanitation, City Health Department

Walter H. Harper, M.D., Guntersville, Ala., County Health Officer

Roland W. Harrison, M.S., Dallas, Tex., Instructor in Bacteriology and Hygiene, Southern Methodist University (Assoc.)

Willard S. Hastings, M. D., Auburn, N. Y., Director, Cayuga County Laboratory

John N. Hayes, M.D., Saranac Lake, N. Y., conducts a weekly clinic for children (Assoc.)

Joseph H. Humphrey, M.D., St. Louis, Mo., Director of Division of School Hygiene

Henry A. Johnson, Clarksdale, Miss., investigation subtropical diseases (county-wide)

Frances King, Olean, N. Y., Statistician, Cattaraugus County Health Demonstration

Merrill J. King, M.D., Mount McGregor, N. Y., Director of the John Rogers Hegeman Memorial Research Laboratory of the Metropolitan Life Ins. Co.

Helen B. Kitchin, Brockton, Mass., Health Education

John L. Lavan, M.D., Kansas City, Mo., City Epidemiologist

Robert D. MacLaurin, Ph.D., Cleveland, O., Superintendent of Air Purification
Charles N. McBryde, M.D., Ph.D., Ames, Ia., Bacteriologist in the Biochemic Division of the Bureau of Animal Industry of the U. S. Department of Agriculture engaged in the study of animal diseases
Clarissa McFetridge, B.A., Green Bay, Wis., Director of State Coöperative Laboratory
Ruth E. Miller, R.N., Pelham, N. Y., at present taking a course in Biochemistry at the New York Post Graduate Hospital
Otto C. Murphy, Kansas City, Mo., Food and Dairy Director
J. H. O'Neil, B.S., New Orleans, La., Sanitary Engineer, State Department of Health
Herman E. Pearse, M.D., Kansas City, Mo., Health Commissioner
Robert E. Plunkett, M.D., Albany, N. Y., Director Division of Tuberculosis, New York State Department of Health
Virgil G. Presson, B.S., M.D., Santa Ana, Calif., County Health Officer
Clara R. Price, R.N., New York, N. Y., Superintendent of Mulberry Health Center
John J. Randall, M.D., Warrensville, O., Asst. Medical Superintendent, Cleveland Municipal Tuberculosis Sanitarium
Andrew A. Robertson, M.D., Council Bluffs, Ia., Health Officer
Louise C. Robinson, Chicago, Ill. (Assoc.)
Emilie G. Robson, R.N., New York, N. Y., Field Secretary, employed by the Committee of National League Nursing Education
Robert H. Rose, A.B., M.D., New York, N. Y., Diagnostician and Dietitian, Midtown Hospital
Helen L. Ryan, B.A., Syracuse, N. Y., Director of Health Education, Onondaga Health Association (Assoc.)
H. O. Sappington, M.D., Austin, Tex., State Health Officer
Mildred C. Scoville, New York, N. Y. (Assoc.)
Barry C. Smith, B.A., New York, N. Y., Director Commonwealth Fund (Assoc.)
R. B. Stafford, M.D., Junction City, Kans., County Health Officer
Charles W. Stewart, M.D., Washington, Ia., Director Washington County Health Unit, Member of Iowa State Board of Health
James Stewart, M.D., Jefferson City, Mo., Secretary State Board of Health and State Health Commission
Herbert R. Sugg, M.D., Clinton, Ia., Health Officer, Member of Iowa State Board of Health
Russell B. Tewksbury, D.Sc., Harrisburg, Pa., Acting State Registrar of Vital Statistics
Gustav A. Theilmann, Jefferson City, Mo., Statistician, Vital Statistics Division, Department of Mo. State Board of Health
Walter van Dohlen Tiedeman, B.E., M.C.E., Elsmere, N. Y. Assistant Sanitarian, N. Y. State Department of Health
David B. Tuholski, B.S., M.D., Brockton, Mass., Health Officer
Milton V. Veldee, M.D., Chicago, Ill., U. S. Public Health Service
Ruth Weissman, M.D., Mattapan, Mass., Private Practice, Health Examinations, Child Hygiene Conferences, Mass. State Health Department
Kenneth D. Widdemer, New York, N. Y., Executive Officer, East Harlem Health Center
Joseph C. Willett, D.V.M., St. Louis, Mo., Chief Bacteriologist, City of St. Louis
Edward M. Williams, A.B., B.S., M.S., M.D., Oskaloosa, Ia., Health Officer
Helen J. Williams, A.B., M.S., Cleveland, O., Assistant Director, Bureau of Statistics and Research, Cleveland Health Council
John W. Williams, Jr., B.S., M.D., Springfield, Mo., County Health Officer
Stuart Yntema, M.D., Saginaw, Mich., School Physician
Harold A. Young, Los Angeles, Calif., Chief Sanitary Officer, Los Angeles County, in charge of all sanitary and food work

LIST OF A.P.H.A. FELLOWS

Following is a list of Fellows elected at the St. Louis Annual Meeting, October, 1925.

PUBLIC HEALTH ADMINISTRATION
Raymond Voorhees Brokaw, M.D., Springfield, Ill.
William Wallace Brooke, M.D., Bayonne, N. J.
N. O. Gunderson, M.D., Rockford, Ill.
Herbert Luther Lombard, M.D., Boston, Mass.
John J. Mullowney, M.D., Nashville, Tenn.
John Larrabee Pomeroy, M.D., Los Angeles, Calif.
Charles Samuel Woods, M.D., Cleveland, Ohio

LABORATORY
Ruth Gilbert, M.D., Albany, N. Y.
Edgar Erskine Hume, Washington, D. C.
William Henry Marcussen, New York City
Anna W. Williams, M.D., New York City

VITAL STATISTICS
William Thurber Fales, Montgomery, Ala.
Joseph Royal Phelps, M.D., Washington, D. C.
Robert M. Woodbury, Ph.D., Washington, D. C.

PUBLIC HEALTH ENGINEERING
George H. Ferguson, Toronto, Canada
Arthur Ellsworth Gorman, Chicago, Ill.

INDUSTRIAL HYGIENE
Edward P. Case, M.D., Hartford, Conn.
Leland E. Cofer, M.D., New York City
Carey P. McCord, M.D., Cincinnati, O.
George Hastings Wood, M.D., Detroit, Mich.
Wade Wright, M.D., New York City

FOOD AND DRUGS
James Houston Shrader, Ph.D., Baltimore, Md.

CHILD HYGIENE
Bernard William Carey, M.D., Athens, Ga.
A. Elizabeth Ingraham, M.D., Hartford, Conn.
Lucy Edna Lazell, R.N., Brattleboro, Vt.

PUBLIC HEALTH NURSING
Helen F. Boyd, Iowa City, Ia.
Olive Alethe Chapman, St. Louis, Mo.
Anna A. Ewing, Newark, N. J.
Eleanor Jones Ford, Detroit, Mich.
Mary Grace Hills, R.N., New Haven, Conn.
Sophie Caroline Nelson, R.N., St. Louis, Mo.
Louise Sitzenstock, R.N., San Jose, Calif.
Elizabeth Stringer, R.N., Brooklyn, N. Y.

UNAFFILIATED
John A. Amyot, M.D., Ottawa, Ont.
Annetta Nicoll Platt, New York City
Max C. Starkloff, St. Louis, Mo.
Victor C. Vaughan, M.D., Detroit, Mich.
Charles Francis Wilinsky, M.D., Boston, Mass.

STATE PUBLIC HEALTH SOCIETIES
New Mexico Public Health Association, Santa Fe, N. M.
Pennsylvania Public Health Association, Harrisburg, Pa.
Texas Association of Sanitarians, Austin, Tex.

EMPLOYMENT SERVICE PLANS

In order to assist in the solution of the employment problem created by the shortage of public health workers who entered the war, the JOURNAL began carrying "help wanted" announcements in January, 1918. After the war, many workers were seeking positions, the first "positions wanted" advertisements appearing in the September, 1920, JOURNAL. Out of this there developed an Association employment service, but lack of funds prevented the continuation of this activtiy, and for some time the JOURNAL advertisements represented all that the Association was doing in this important field. Beginning in 1925, the Employment Bureau was reorganized and is now on a sounder footing.

Many employers look to the Association for personnel but do not advertise in the JOURNAL since often the need is urgent and there is not sufficient time to do so. In order to assist them the Association has built up a file of its members who may be available for work of various types. Any member of the Association may indicate a desire to have his name placed on this list.

Commencing with the January, 1926, issue of the JOURNAL the page that his been regularly devoted to the Employment Bureau advertisements will be discontinued. Notices regarding opportunities in the public health field will be listed under Association News from month to month. Those who wish to advertise for positions or for personnel may do so in the regular classified advertising section of the JOURNAL (see page xx).

The Employment Bureau of the Association has at present requests for types of workers listed below.

Members may secure additional information regarding these opportunities by writing to the Employment Bureau of the Association, 370 Seventh Avenue, New York City.

Health officer in a Tennessee city. Only physicians licensed to practice in Tennessee will be considered. Part of the regular duties will be to care for the indigent sick.

Excellent opportunity for an M.D. with public health experience to become director of a clinic in a large eastern city. Salary commensurate with ability. Excellent opportunities for increase. Minimum salary offered $7,000. The position includes exceptional professional affiliations.

Bacteriologist and pathologist in a city health department in New England. Degree of M.D., although not essential, will be of value. Salary ample to secure the services of a first class man or woman.

Health officer in New England city of 40,000. Must have M.D. degree and must have had public health training or three years' experience as a health officer.

Health officer for full-time county health unit in a western state. Salary $3,000 per annum plus traveling expenses.

Bacteriologist with degree of M.D. as director of state health department laboratory. Ability to speak before audiences a requisite. Salary $3,000 per year.

Bacteriologist by the Milwaukee Health Department. A non-assembled examination, not necessitating traveling to Milwaukee, will be given. Requests to take examination must be received prior to December 21. Position permanent. University training desirable, but satisfactory experience will be accepted in lieu thereof. Open to both men and women. Address City Service Commission, City Hall, Milwaukee, Wis.

POSITION WANTED

Wanted: Young man desires position in municipal or county laboratory as bacteriologist. Holds B.S. from eastern college and equivalent of M.S. from large mid-western university. Willing to work. Address 374, B. C., care this JOURNAL, New York address.

Medical Executive, experienced in Army, municipal, industrial and association health work wants full-time position; best references. Address 360, C. L., care this JOURNAL, New York address.

Wanted: M.D., 38 years old, desires position as health officer or as epidemiologist. Thirteen years' practical experience in the public health field. Excellent references. Correspondence invited. Address 384, B. G., care this JOURNAL, New York address.

Veterinarian, well experienced in the practical work of food, meat and milk inspection desires position. Well versed in the control of contagious and infectious diseases of animals Can furnish A-1 references. Address 385, H. A., care this JOURNAL, New York address.

Health Education: Physician, age 40, with 12 years' practical experience in public health desires position with a national, state or private association that is organizing health work or conducting health education and publicity campaigns. Location in east preferred. Correspondence invited. Address 348, M. F., care this JOURNAL, New York address.

Wanted: Position in state, county or city health department or in college by physician experienced in all modern lines of public health activities, especially epidemiology and educational and publicity work. Have had 3 years' university training in public health. Address 371, M. F., care this JOURNAL, New York address.

BOOKS AND REPORTS

Lord Lister—*By Cuthbert Dukes, M.D., M.Sc., D.P.H.*

Sir Edwin Chadwick—*By Maurice Marston. The Roadmaker Series. Boston: Small, Maynard and Company,* 1924 and 1925. 186 pp., 186 pp. Price, $1.75 per volume.

The "Roadmaker Series" is most happily named and the publishers have done a real service to the world in giving the volumes published up to this time.

Those interested in preventive medicine and public health will be particularly attracted to the two volumes included in this review, both of which are well done in every respect, and both of which can be commended to professional as well as to lay readers.

The accomplishments of Lord Lister are fairly well known to the general public. All students of medicine are given a review of the genesis of antiseptic surgery and the wonders it has accomplished. In every household something is known of the action of germs and the antiseptic treatment of wounds, even where the name of Lord Lister is not familiar.

The two outstanding sources of information concerning Lord Lister are his "Collected Papers," and his biography written by his nephew, Sir Rickman Godlee. To these, professional readers may be directed. For the general public they may be said to be too voluminous and too expensive in spite of their overwhelming interest and value. The present volume presents to us within the scope of 185 pages an excellent review of the life and accomplishments of a great benefactor of mankind, written in a charming fashion and in language which persons who have not had medical training, even youths, can understand and appreciate.

Sir Edwin Chadwick's name is not so well known. He was not a physician and the majority of medical students do not even hear his name during their college years; yet to him more than to any other one man we owe the reforms which characterized the treatment of the poor, the sick and the criminal in England. Some 40 years ago Sir Benjamin Ward Richardson published a biographical sketch of Chadwick with extracts from many of his reports and papers under the title "The Health of Nations." It was in two large volumes, now rare. His reports, speeches, articles, etc., are hidden away in many files in the British Museum and elsewhere. The present volume is therefore especially welcome.

Born 22 years before Pasteur, and some 55 years before Pasteur began his publications, Chadwick's first essay on "Life Assurance" was published in 1828, while Pasteur was still a child. Even at this time he had become convinced that environment must affect the length of life and the health of the individual. His work, "Preventive Police," went deep into the underlying causes of poverty and crime. He turned aside from a profitable career as a lawyer and devoted the rest of his long life of 90 years to improving the condition of his fellowmen. He studied the registration of births and deaths, factory legislation, intemperance, education, housing, the investigation of crime, police methods, the disposal of the dead, and even the extinction of fires. He delved into everything affecting the lives of human beings, always asking "Why" to everything. Why do mean steal? Why is immorality prevalent? Why do we suffer cholera epidemics? Why do we breed crippled and deformed children? Why do we lead insanitary lives?

With his first two articles his philosophy of life was formed and he became obsessed with what has been called his "Sanitary Idea." He was a pioneer in every sense of the term, far ahead of his day and generation, an outstanding benefactor to mankind. He is justly regarded as one of the most remarkable men of the 19th century and it will always be to his glory that his work was given chiefly to the poor and the oppressed.

Like the book on Lord Lister, this book is clearly written in language that anyone can understand. Both volumes contain condensed chronological tables most valuable for rapid reference. They are well printed on paper of light weight and matt surface, are of a convenient size for handling and we hope will have a wide circulation. M. P. RAVENEL

Eye Sight Conservation—*Bulletin 7, issued by the Eye Sight Conservation Council of America, Times Building, New York City.* 219 pp.

This volume is a condensed report of an extensive survey of the entire subject of eyesight conservation. The results of the study are presented under several general headings: Eye Defects and Diseases, Eyesight and Its Relation to Education and Industry, Eye Protection and Lighting.

As stated in the introduction, this report is intended to show some of the results of past and present practices, investigations and experimentations as related to eyesight conservation. The material is presented in non-technical language. The lay reader will be greatly assisted by a brief definition of terms in the beginning of the book, and the research worker will note with interest the numerous references to important literature, the display of comparative statistics on defective vision, and the very complete and timely bibliography.

The section on the relation of defective vision to retardation gives data from a number of courses which emphasize the need for further research on this important question. For example, an analysis of this data shows considerable variation in the proportion of retardation noted by different observers, varying from 9.3 to 74 per cent.

The inclusion of a chapter on illumination is to be commended. Workers in this particular field have a lively appreciation of the relationship of problems of illumination and eyesight conservation, and of the notable lack of exact information on the underlying principles of this relatively new science and its phraseology by those whose duty it is to maintain the growing school child in an environment best suited to his physical and mental development.

TALIAFERRO CLARK

The Children's Bureau. Its History, Activities and Organization—*By James A. Tobey. Baltimore: Johns Hopkins Press,* 1925. 83 pp. Price, $1.00.

The Institute of Government Research has undertaken the preparation of a series of monographs giving a detailed description of each of the distinct services of the government, the present study (No. 21) being one. The study is wholly descriptive in character, setting forth the history of the Children's Bureau, its activities and organization. The appendices give: Outline of Organization, Classification of Activities, Publications, Laws, Financial Statement and Bibliography.

Although the Institute does not attempt to criticize present conditions nor indicate features which might be advantageous, it is hoped that this monograph will stimulate legislators to realize the need for a federal department of public health, in which the health activities of the Children's Bureau will become a rightful part rather than as an adjunct to the Department of Labor. E. H. B.

Alergy. Asthma; Hay Fever; Urticaria and Allied Manifestations—*By William W. Duke, Ph.B., M.D. St. Louis: C. V. Mosby Co.* 339 pp. Price, $5.50.

Certainly a "concisely complete" treatise on allergy. The curtain which often places the subject of allergy in the shadows of mystery is removed and allows even the most casual to become wrapped up in the very interesting story of the important subject.

Besides discussing pollen allergy there are pleasing and instructive chapters dealing with foods, and physical agents such as light, heat, cold, mechanical irritation. While there is no particular discussion regarding the influence of the endocrines on allergy or the rôle of calcium therapy it is quite evident that the book is not intended to include these subjects at this time.

All those practicing medicine, whether specializing or not, would do well to have this excellent book. ALBERT G. BOWER

Health Maintenance in Industry—*By J. D. Hackett. Chicago & New York: A. W. Shaw Co.*, 1925. xx+488 pp. Price, $5.00.

This book, by a lecturer in New York University, on labor and employment management is a masterpiece with a strong appeal to industrial managers to grasp the economics of health maintenance in industry, and to industrial physicians to extend their work in their respective establishments. The viewpoint is comprehensive, the argument of high order and the sources of information well selected, authentic and recent. Free use has been made of government reports both here and abroad, of material in scientific periodicals dealing particularly with the field in question, of the leading insurance experiences, etc.

The book is divided into four parts: Health Maintenance, The Medical Department, The Surgical Department, Plant Hygiene, and Plant Sanitation, and finishes with an excellent 10-page general conclusion.

Citations are numerous and conveniently placed in the text at the foot of each page. Many American hygienists and industrial physicians, and some English and continental authorities are cited. The work appears to us as just the book for the general health worker who wishes a practical labor consultant's point of view on the industrial health question supported with sufficient representative statistics and case illustrations, while at the same time quite free of technical discussions of interest chiefly to specialists.

The author has been misled by the relative importance of lead poisoning which has in the past, to quote a recent reviewer, "truly led the way in industrial toxicology, but its causation is now so well understood and its frequency is so rapidly diminishing, that the time has come to place it in more correct perspective." As a general thing various toxic and irritant substances to the skin are causing much more trouble in American industry today than lead poisoning. A number of specific transcripts from the literature which we have compared are inaccurate, *e.g.*, the table given on p. 153, the benzene and benzine discussion on p. 185, the transference of credit to Dr. C. D. Selby on pp. 473–474 which really belongs to Dr. C. P. McCord (*see American Journal of Public Health*, March and April issues, 1925), *et al.* While we cannot accept the book as authoritative as to details, its main theme is logical, wholesome and very timely.

Our chief criticism is that the author has apparently overlooked the small plant and subcontractor situation wherein are employed the majority of American workmen and for whom the organization of a competent health service seems a "Gordian knot." The author also, we think, fails to point out the significance of government delinquency in this matter and the necessity for governmental stimulus to arouse a better understanding on the part of the small employer. The issue is truly an economic one for his own existence. Likewise, little is said about the opportunity for the local health department in the situation. This book should prove a tremendous aid to the field in its strong appeal for scientific industrial management which recognizes—what "efficiency experts" have too long overlooked—the value of scientific medicine including hygiene in the work place. In passing, it appears adaptable as a textbook for colleges where courses in industrial management, engineering or medicine are given.

E. R. HAYHURST

The American Illustrated Medical Dictionary—*A New and Complete Dictionary of Terms Used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with the Pronunciation, Derivation, and Definition. Thirteenth edition, revised and enlarged. Edited by W. A. Newman Dorland, M.D. Large octavo of 1,344 pages with 338 illustrations, 141 in colors. Philadelphia and London: W. B. Saunders Company*, 1925. Flexible binding. Price, $7.00 net; thumb index, $7.50 net.

The thirteenth edition of this book since its first appearance in 1900 attests its favorable reception. Medicine and the allied sciences are advancing so rapidly that textbooks become old almost over night. Since the last revision of this dictionary in July, 1923, approximately 2,500 new words have been added. Throughout the pronunciation and derivation are given as well as the definition.

It is, of course, impossible to inspect every word even if any single reviewer were competent to do so, but search for a number of words which have come into use most recently reveals their presence. There is little to criticize in this book. One notes some irregularity in method. For examples, all operations are listed under operation, oils under oil, sinuses under sinus, etc. Many of these are found also

in their proper places under the name of the discoverer or their usual designation, but some are not. Space could be saved by cutting out these cross references, though convenience in the use of the book would be sacrificed to some extent. The editor's method of the selection of words to be cross indexed and those not is not clear. An appendix of 36 pages gives a posologic and therapeutic table. The table of weights and measures, and the comparison of the different systems, often given in an appendix, is placed in the body of the book.

The book is well printed on thin paper and remarkably free from typographical errors. The illustrations, 141 of which are in colors, are of excellent quality. It can be recommended without hesitation not only to those in the professions for whom it is especially designed, but also for newspapers, writers, and the general public, all of whom should know more about the proper use of correct medical terms. M. P. RAVENEL

Les Grands Narcotiques Sociaux—*By Docteur Legrain, Médecin en Chef des Asiles d'aliénés de la Seine. Paris: Grande Librairie Médicale A. Maloine,* 1925. Paper. Price, 20 francs.

The experience of the author gives him a right to speak authoritatively. It has apparently impressed on him to an unusual degree the evil effects of narcotics. In addition to his experience he has evidently studied the question extensively, and he gives a good deal of interesting history, supported to some extent by official figures.

The book consists of three parts, the first of which considers the narcotic poisons, opium, tobacco, and alcohol; the second part, what he calls a "psychoanalysis of the endemic poisoning" produced by these drugs; while the third part is devoted to what he considers remedies. The second part of the book is in our opinion the best. As remedies for the conditions the author thinks he sees, he places first of all conscience and individualism. He praises prohibition in the United States, recognizing that it was a war measure which has been continued —as he thinks, by the will of 110,000,000 people—but he evidently knows nothing about the actual results of the measure.

He closes his book with well known quotations from Darwin who pointed out that man is the only animal in the world who is wicked without profit, without an object, and without necessity, for the simple pleasure of being wicked; the only animal who eats without being hungry and who drinks without being thirsty; who kills those of his kind who are more feeble than himself; who smokes tobacco, inhales poisons, drinks fermented liquors, intoxicates and besots himself by every imaginable means.

The book is interesting as a contribution to questions which are engaging the attention of people in many parts of the world. The author is an apostle of total abstinence, and is opposed to any measure based on moderation. He injures his argument by extravagant expressions and by conclusions not justified by the facts. It is well known that Pasteur devoted some of his earliest study to diseases of wines and beer, and that he practically saved these industries to France, not only by these studies but by his later attention to diseases of the vine, yet the author twists this around and argues that Pasteur has shown us the way to stop alcoholic fermentation and thus stop drunkenness! His language is that of the propagandist, while many of his statements and the views he takes are so extreme as to injure their value to the cause which he seems to have so much at heart. M. P. RAVENEL

Hospital and Health Agencies of Louisville—A Survey—*By Haven Emerson, M.D., and Anna C. Phillips. Made for the Health and Hospital Survey Committees of the Louisville Community Chest,* 1925. Price, 35 cents.

Louisville is the latest of our cities to acquire the habit of looking into the Emerson mirror. It is not, however, a habit born of vanity, but of an honest appreciation of health imperfections, such as are unfortunately endemic among so many of our urban centers. And, what is better, it represents a determination for improvement.

One gets, in Dr. Emerson's survey, an almost perfect picture of the city that has passed through the period of lush, adolescent growth and attained its physiological majority, but has not yet awakened to a full realization of the vital requisites for a sound and happy maturity and old age.

A pinching and painful economy in public appropriations for essential health measures; a brave but losing effort on the part of private agencies to cover the bare spots in the health program—this is the not unfamiliar but especially well illustrated story that is told.

It can be assumed from the paragraphs on population that Louisville was practically uninfluenced by the large migratory movements of negroes that have affected many other urban and rural communities in recent years. It is to be regretted that all doubt on this point was not cleared up by specific reference to it.

In reading the list of the matters requiring the most immediate attention of a hospital and health council it is a surprise to note that they are primarily for the sick and the incurable. But a good beginning has been made in infant welfare, in nursing, and in tuberculosis work, and in other fields in which greater preventive effort is needed the chief desideratum is more public instead of private responsibility.

This excellent report gives the impression of having few weak spots. But one does wish that a more emphatic statement had been made in favor of adequate salaries for health officials of cities the size of Louisville, and also that more specific suggestions had been given as to where additional funds might most advantageously be spent.

This review of Louisville's conditions and needs covers a wide range with admirable brevity of statement. The report might well be used by communities elsewhere in taking stock of their own health efforts. This is especially true if they have the all too prevalent habit of looking in the mirror only to lose themselves in self-admiration.

COURTENAY DINWIDDIE

Human Constitution—A Consideration of Its Relationship to Disease—*By George Draper, M.D., Associate in Medicine at Columbia University, New York City. Philadelphia and London: W. B. Saunders Company,* 1924. 345 pp., 208 ill., 105 tables. Price, $7.50 net.

This book has been written with a view to classifying human beings for the purpose of determining their disease potentialities. In this study, for reasons enumerated in the book, persons under 18 or over 60 years of age have been excluded. The study is on anthropometrical morphology and strives for exactness to replace the usual methods of such works which are less exacting and chiefly observational and descriptive.

The author points out that the study of disease processes dominates the formalized medical histories of patients as taken today, and that those points displaying hereditary characters of constitution are neglected or omitted excepting in diseases of a very specific type, such as Mongolian idiocy, cretinism, etc.

The author divides a study of personality into 4 main panels of hereditary unit characters, all of which should receive consideration in a study of the individual. These panels in the aggregate, only, constitute an individual personality and are as follows: physiology, psychology, immunity and anatomy. If these four panels of personality be correlated and studied in each individual of a large number of persons, a frequent repetition of certain combinations of characters are definitely observed, so that from a careful analysis of the anatomic panel, alone, it is possible to predicate with great correctness the nature of the other panels. He goes into great detail as to the measurements and the instruments necessary.

He has limited his study to 6 sharply defined disease entities, viz.: pernicious anemia, pulmonary tuberculosis, asthma due to known protein sensitization, nephritis and hypertension, gall-bladder disease, and gastric and duodenal ulcers. The book is based on 298 cases of the above named diseases upon which complete measurements were made.

Common sources of error in such a study are mentioned and the limitations to their consideration are delineated. Among these may be mentioned race, sex and the endocrine glands. There are many statistical tables and the book is profusely illustrated with various graphs.

The author concludes that such a study would indicate that the capacity of an individual to react—or not to react—with a particular external agent or menace, is a constitutional quality (modified it is true by environment to a certain extent) which is just as specific as the other qualities of body size and conformation, function, gesture, or psychic pattern.

It is an interesting book, well written, and directs our attention to a very old but sadly neglected field for investigation in the fight against disease. ALBERT G. BOWER

The Ministry of Health—*By Sir Arthur Newsholme. London and New York: G. P. Putnam's Sons,* 1925. 271 pp. Price, $2.00.

We have yet much to learn from the country which in spite of a far lower cost of living than ours pays its full-time health officers beginning salaries of about $6,000 and which guarantees them their offices without limit of time until they die or resign or are removed

from office with the consent of the national health authority. Sir Arthur points out that in England as in this country the increase of taxation is made the "subject of occasional lugubrious warnings." But here as in England this is a reason for wise guidance but "not for the extravagant parsimony which refuses to spend what is needed to secure the highest obtainable standard of communal health and welfare."

Sir Arthur Newsholme's monograph on the Ministry of Health, or more properly on the general health administrative machinery of Great Britain, is naturally in large measure too closely confined to the details of British practice to be of interest to any but the advanced student of health administration. Yet there is much in the work which will appeal to every thoughtful health officer. The outline of topics that should be treated in an annual report in Chapter III might well, for example, be taken as a model by any American official. The outlines of what has been done in England in regard to maternity and infant welfare and the control of tuberculosis and venereal disease, the discussion of the relation between poverty and health, the analysis of the problem of health insurance and of the relation between the health officer and the physician, open up questions of universal and world-wide import; and it is of much interest to note that Sir Arthur seems to have somewhat modified his views in regard to health insurance, giving on the whole a less unfavorable picture than in his earlier works.

Above all, the American readers will find inspiration in the broad and statesmanlike discussion of the underlying fundamental problems of government and administration to which the English give so much more constructive attention than we do in this country. Sir Arthur's analysis of the principles which should underlie the relation of general and local authorities (Chapter IV), of the relation between technical experts and lay boards, of the question whether "the distribution of the functions of departments shall be (a) according to the persons or classes of persons to be dealt with, or (b) according to the services to be rendered" (Chapter VI and Chapter VIII), involving such relations as those between health and educational authorities on the one hand and between health inspectors and factory inspectors on the other—all these deal with problems which we are meeting every day and which we are meeting too often in the light of immediate expediency and without thought of the underlying principles which alone can insure sound progress in the ultimate future.

C.-E. A. WINSLOW

Manual of American Water Works Practice—*Published under the auspices of the American Water Works Association. Abel Wolman, Editor. Baltimore: Williams and Wilkins Co.*, 1925. 790 pp. Illustrated. Price, $5.00.

When divergent views are held regarding certain practices it becomes necessary for authorities to determine the best practices by extensive investigations and interchange of views. This leads eventually to standardization. Although the Council on Standardization of the American Water Works Association has not as yet standardized the practices in many features of the water works industry, the material which has been gathered together in this handbook indicates that standardization of many of the practices will soon develop.

Since the establishment of the council in 1920, its various committees have made reports. These reports together with papers and discussions presented to the Association have made available sufficient material to bring out a first edition of a water works practice manual. This book, therefore, is the more valuable since it is the result of group effort, the council's committees being largely responsible for its success.

Following the introduction, six major topics are given consideration: Collection of Water, Quality of Water Supply, Treatment of Water, Distribution of Water, Financing and Management, and Fire Protection. Standard Forms, Procedures, Specifications and Contracts are given in the appendix.

A manual of this kind has been needed for some time and should be in great demand. Those who are interested in water supply will find it extremely helpful, especially members of water boards and commissions, managers and superintendents of water works, and specialists who design, manage or supervise the highly technical parts of the works. E. H. B.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

Attleboro, **Mass.**—The city of Attleboro, according to the 1924 annual report of the health department, is credited with a population of 23,019. A general death rate of 11.0 per 1,000 population is recorded. Of the 33 infant deaths, 20 occurred during the first month of life. Unfortunately the number of births during the year is not given, although it is stated that the infant mortality rate compares favorably with that of other communities.

The health officer's report to the mayor and municipal council is one of unusual interest for a city of this size as it strikes a progressive note in emphasizing the newer public health tendencies and in outlining plans for the future. Interestingly enough, the final recommendations urge the employment of a full-time milk and sanitary inspector, an appropriation for a properly supervised dental clinic, the chlorination of the municipal water supply, and the making of a general municipal health survey. The estimated appropriation for 1925 amounts to $18,723, including $2,250 for garbage disposal and care of the dumps. A photograph of the 1924 health camp with an account of the purpose and results of the camp is a feature of the report. Financial assistance for the camp, which cared for 30 boys for a period of six weeks, was furnished by the Attleboro Lions Club, while supervision of the camp was exercised by the health department. Each boy received a physical examination on admission, and individual photographs were made on admission and at the time of discharge. Remediable defects interfering with normal growth were corrected before admission. This group of the city's most poorly developed and undernourished children (but not tuberculous) showed an average gain per boy for the 6-weeks period of 7½ pounds. Follow-up work is now being done for these children through the health department clinic.

Baltimore, **Md.**—The 1924 report of the Sub-department of Health of the Department of Public Safety of Baltimore contains many of the good features desired in a report for a large city. It has an attractive cover; is well printed in readable type; and gives at the outset the population of the city (784,938) together with important vital statistics. It contains a great deal of information concerning the activities of the health department during the year, together with a concise statement of "our objectives."

The report covers 269 pages including a table of contents in the front and an index in the back of the publication. The commissioner's summary and individual reports of bureau chiefs occupy the first 107 pages, while the remaining portion of the report contains detailed statistical tables full of an immense amount of interesting and valuable information for those interested in statistical problems or in following the growth of population or trends of disease over a long period of years.

The death rate of 14.4 per 1,000 population, including non-residents, was slightly less than that for 1923 of 14.98 or for the average of the past 6 years of 14.96. A new hospital for communicable diseases has been erected with facilities for 110 beds. Continued improvement is noted in the milk supply, and an order has been issued that on and after January 1, 1926, all dairy herds must be tuberculin tested and all reactors removed from the dairy farms.

Activities in the prenatal, the preschool, and other child welfare clinics are being extended as rapidly as possible. Since the beginning of this work in 1919 there has been a reduction in infant mortality of 34 per 1,000 of children born each year. The infant mortality rate in 1924 was 83.6, 74.4 for the whites and 125.0 for the colored persons. For this same period there were 14,445 white babies born, and 3,216 colored. A special report by the school psychiatrist calls attention to the need not only of a set of complete successive classes in each school, but also vocational schools where these children, having reached the age of 14, 15, or 16, can learn trades for their life work.

Worcester, **Mass.**—Following a well arranged title page, and 2 pages given to the organization of the department, the 1924 Worcester report contains a classified financial statement and a brief but enlightening message by the chairman of the board to the mayor. The estimated population of the city is given as 196,200, with a general death rate of 12.4. One of the interesting features of the report is a table dating from 1897 showing the proportion of cases of diphtheria and scarlet fever reported in the city which came to the hospital. This

indicates that for the past 20 years at least the hospital has been well utilized and that in 1924, 52.4 per cent of the cases of diphtheria and 43.1 per cent of the cases of scarlet fever were thus cared for.

Montreal, Que.—One of the best health department reports for 1924, from the standpoint of printing and inclusion of pertinent administrative data, is that of Montreal. Following a carefully prepared table of contents, are listed the various divisions and members of the staff of the Department of Health. The first page of the report of the director to the executive committee of the city contains a statement to the effect that the city's population has been figured at 655,800, with an expenditure by the section of hygiene proper of 41 cents per capita. Classified expenditure data follow.

The death rate of 14.87 per 1,000 population is 2.99 per 1,000 below the average of the 10 preceding years. The infant mortality rate of 146.5 per 1,000 births is the lowest observed since the organization of the bureau of statistics, the average for the 10-year period 1914-1923 being 176.7. Of these deaths in 1924, 34.5 per cent were due to diarrhea and enteritis, 23.9 per cent to congenital debility, 8.2 per cent to bronchopneumonia, 6.3 per cent to premature birth, and 5.8 per cent to contagious diseases. Attention is called to the high rate from diarrhea and enteritis as a demonstration of the necessity of hastening the adoption of a milk by-law. Tuberculosis mortality has declined from a rate of 229.8 per 100,000 inhabitants in 1914 to 149. in 1924.

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LA TUBERCULOSE PULMONAIRE. By Leon Bernard. Second ed. Paris: Masson et Cie., 1925. Pp. 400. Price, 28 fr.

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LABORATORY

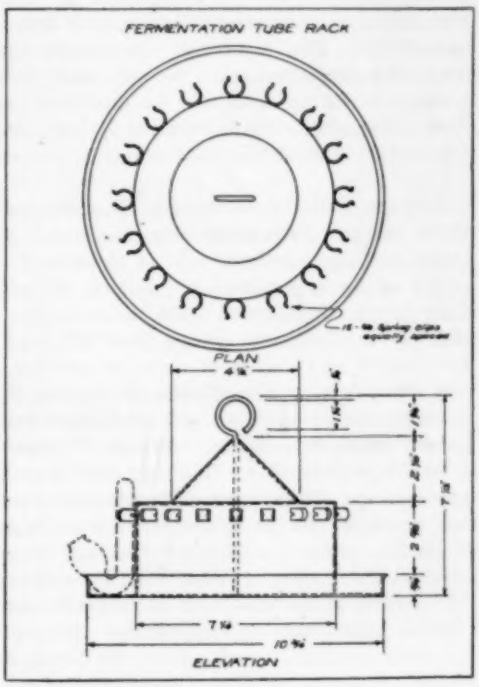
C. C. YOUNG *

A Fermentation Tube Stand—Much ingenuity has been displayed in designing of stands for fermentation tubes, and since the fermentation tube test has been recognized as the most dependable for detecting contamination in biologic products, the use of such stands has become very common. The old type fermentation tube with a foot has been very generally discarded because of the enormous breakage involved and footless tubes have been largely substituted. The irregularity in size of fermentation tubes is a noteworthy disadvantage and stands constructed for a particular size are not always suitable for the accommodation of other sizes. The consequence is not only loss by breakage, but—and this is of greater importance—the loss of inoculated tubes, rendering a test incomplete.

We have now in use a stand which eliminates all disadvantages previously experienced. A stand full of fermentation tubes can be carried without special precautions against breakage and the tubes are so arranged that systematic markings may be made with ease. The stands are made of brass which may be nickel plated if so desired. The accompanying sketch shows the design. The dimensions are such as to accommodate large fermentation tubes of a capacity of 30 to 32 c.c. when filled to the middle of the bulb. Each stand holds 16 tubes.

Spring clips (5/8 in.) are fastened in a circle to the body of the stand as shown in the sketch. A conical head whose base diameter is 4½ in. ends in a hook which permits easy transportation. The round bottom is 10¾ in. in diameter. A circular band is fastened to the bottom and rises ¾ in. above the bottom. The closed arm of the fermentation tube is slipped into a spring clip and the bulb rests lightly against the band which is flanged at the top. The tubes are thus held rigidly and may be handled without risk of displacing or dropping.

The design may be modified to suit the demand of any worker. The number held in one



stand may be arranged according to the needs of the laboratory. If only small fermentation tubes are used, the clips may be placed closer together than indicated in the sketch. However, any stand built for a large size tube, accommodates smaller tubes, if this is desirable. It is only necessary to pinch the clip together, in that case. Where there is ample space in the incubator several circles of clips can be placed above each other in cylindrical or conical shape. One stand can be so constructed as to hold a large number of tubes. The fermentation tubes can be sterilized in the stand or they can be

* Each month we desire to publish in the LABORATORY NOTES short, original articles, under the author's name, dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the fifteenth of each month.—C. C. YOUNG, Department of Health, Lansing, Mich.

sterilized separately and inserted into the stand after the air has been tipped out of the tube.

Since this type of stand has been used in our laboratories, breakage has been materially reduced and work with fermentation tubes has been much facilitated.—P. G. Heineman, Director of Laboratories, Cook Laboratories, Inc., Chicago.

The Relation of Variation in Susceptibility to Accuracy of Virulence Tests—In a series of experiments on guinea pigs to determine the relation which variation in susceptibility bears to accuracy of virulence tests, 2 out of 125 were found to show natural immunity to diphtheria toxin. This percentage was thought by the workers to be too small to be of much importance in the virulence test for diphtheria.—Ruth Gilbert and H. H. Owens, *J. Lab. & Clin. Med.*, 11:35 (Oct.), 1925. C. K.

A Micro-Folin Wu Method of Quantitative Blood Sugar Estimation—By means of a special diluting pipette 0.1 c.c. of blood is obtained as for a blood count. This is diluted with 0.7 c.c. distilled water and by closing the ends of the pipette the diluted blood will keep for from 9 to 12 hours at room temperature. The blood is next treated with one volume 10 per cent sodium tungstate and one volume 2/3 normal sulphuric acid and allowed to stand from 10 to 20 minutes. It is then centrifuged and the clear filtrate used. The solutions used are prepared the same as for the original Folin-Wu method. This micromethod is a minimized and not a modified Folin-Wu method of blood sugar estimation. It saves the patient the fear and danger of venipuncture. It saves the time of the operator, since the blood is drawn, measured and diluted as easily as for a blood-count and its simplicity and accuracy make it desirable for routine use. Eighty-six bloods were compared by the 2 methods without a single discrepancy.—T. L. Byrd, *J. Lab. & Clin. Med.*, 11:67 (Oct.), 1925. L. R.

Hydrogen Sulphide Production by Anaerobic Spore-Bearing Bacteria—The author undertook a study of hydrogen sulphide producing properties of the anaerobic spore-bearing bacterial group. On account of the variability of commercial peptones, a medium of Tilleys containing a known quantity of sodium thiosulphate was used. The organisms tested fell into 2 groups, those that produced hydrogen sulphide strongly in 24 to 48 hours and those which failed to produce any. One organism, *B. histolyticus*, gave a borderline reaction. The experiment was repeated using medium containing lead acetate but no sodium thiosulphate. The results were less distinct and required a longer period of incubation. *B. histolyticus* failed to give any reaction. The author gives a discussion of work done by other authors on the blackening of meat and brain media by anaerobes, and concludes that results with Tilleys medium are more reliable. The author also concludes that there is no essential correlation between native protein digesting ability and hydrogen sulphide producing properties of these anaerobes.—M. C. Kahn, *J. Bacteriol.*, 10:439 (Sept.), 1925. E. S.

Blanching Test in Scarlet Fever—A specific streptococcus antiserum has been used in the blanching test in scarlet fever which seems to be of practical value in the diagnosis of the disease, as it has been found to produce the Schultz-Charlton blanching phenomenon and excludes the necessity of using normal or convalescent serum to bring about the reaction. Antiserum was prepared by the intravenous injection of horses with whole cultures of hemolytic streptococci and the subcutaneous injection of the toxin of these organisms. Fifteen patients ill with scarlet fever, and usually within the first 48 hours of eruption, were injected with the antiserum. Controls were also run with serum known to produce a blanching reaction. In all cases blanching was produced by the antiserum. It proved to be ineffectual however in 2 cases of erysipelas and 2 which showed a scarlatiniform eruption. In 3 cases scarlet fever rash was not blanched by the use of diphtheria antitoxin. These results would seem to be indicative of the presence of definite antibodies for scarlet fever in the specific antiserum.—S. J. Levin and J. P. Parsons, *Am. J. Dis. Child.*, 30:232 (Aug.), 1925. E. M.

Studies on the Serologic Classification of B. Botulinus—The study includes 104 strains of *B. botulinus*, Types A and B, by means of agglutination and absorption. The toxicological and serological reactions agree with one exception, 1 strain being toxicologically type B is nevertheless agglutinable by type A antiserum. Type A strains fall into 2 large groups and into a smaller unclassifiable group of ultra specific strains. Type B strains fall into 4

groups: 3 of which are distinct and 1 is unclassifiable and ultra specific. Marked cross agglutination between A and B types is frequently noted. Inagglutinable strains of *B. botulinus* are encountered. Authors claim that a strain has never mutated from one group to another under artificial cultivation for 2 to 3 years in beef heart mediums.—P. Schoenholz and K. F. Meyer, *J. Immunol.*, 10:1 (Jan.), 1925. R. L. K.

Agglutinin Absorption—The value and limitations of agglutinin absorption in the identification of organisms is discussed extensively. After reviewing the literature, the authors present data on the significance of the absorption of common or group agglutinins. They conclude that direct agglutination may or may not be a reliable index as to the nature of a bacterium, as this agglutination may be due to common agglutinins. Further, the absorption of common agglutinins may be employed for tentative separation into groups, but such separation has no inherent validity because such grouping may vary with the number and quantity of the serums employed. In the case of polyvalent serum, agglutinin absorption may give tentative information in the case of related cultures provided the cultures used for immunization are also available for the test. Authors recommend that the minimum absorbing dose of the homologous bacterium be determined for each serum. One and one-half to 3 times this dose is generally a satisfactory amount to select for carrying out a series of absorptions to determine the likeness or unlikeness of other cultures. They also discuss the "prezone phenomenon," the reciprocal-agglutinin absorption test and numerous other phases of this problem.—C. Krumwiede, G. Cooper and D. J. Provost, *J. Immunol.*, 10:55 (Jan.), 1925. R. L. K.

Action of Bile Substances on Pneumococcus—Ox bile contains the soaps of unsaturated higher fatty acids not only with 1, but also with 2 and more than 2 double bonds, in a dilution of about 1:600. These substances, when isolated from bile, exert an antiseptic action on the pneumococcus in a dilution of approximately 1:50000 and kill the organism in a dilution of 1:5000 in approximately 1 hour. As their action is, then, about 100 times stronger than that of the conjugated bile acids, the presence in bile should be considered, whereas hitherto it has been entirely overlooked not only by bacteriologists but by physiologists as well. Since the soaps of unsaturated fatty acids do dissolve the pneumococcus cell in broth culture, Neufeld's conclusion is no longer valid. Neufeld's conclusion was that the bile acid salts were the bile elements responsible for the action of bile on the pneumococcus, and that soap did not dissolve the pneumococcus substance.—Kozlowski, *J. Exper. Med.*, 42:453 (Oct.), 1925. M. S. M.

Diphtheria Immunity—Using 17 strains of "avirulent diphtheria bacilli," as well as cultures of *B. hofmanni* and *B. xerosis* immunologic studies showed a wide gap separating them from the diphtheria bacillus. Morphologically the avirulent strains resemble the true diphtheria bacillus, but, based on their experimental work, the authors question the commonly used term—"avirulent diphtheria bacilli."—Rosenau and Bailey, *J. Infect. Dis.*, 37:97 (Aug.), 1925. M. S. M.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Scottish Vital Statistics: Second Quarter, 1925—The Registrar-General's return of births, deaths and marriages registered in Scotland during the quarter ending June 30, 1925, shows that the more outstanding features of the vital statistics during the second quarter of the year 1925 are a birth rate of 22.9 per 1,000, a marriage rate of 6.6 and a death rate of 13.0. The birth rate, though higher than in the previous quarter is the lowest second-quarterly birth rate yet recorded in Scotland, with the exception of the war years, 1917, 1918 and 1919. It is 1.4 less than the mean of those for the 10 preceding second quarters. The marriage rate shows a rise of 0.3 over that for the second quarter of last year but is 0.9 less than the mean of those for the 10 preceding second quarters. The quarterly death rate of 13.0 is 2.2 less than in the previous quarter, but is less than those of the 10 previous second quarters. The infantile mortality rate of the quarter was 81 per 1,000 births. This rate is below the average, being 12 less than the mean for those for the second quarters of the preceding 10 years. The death rates from all forms of tuberculosis and from tuberculosis of the respiratory system were 127 and 85 respectively. These death rates are lower than in the second quarter of last year, the former being 4 lower and the latter 3 lower. The death rate from malignant disease was 135 per 100,000. It is 2 less than in the previous quarter, but 12 more than in the second quarter of last year.—*Med. Off.*, 34:120 (Sept. 12), 1925).

Virulence of Prevailing Smallpox in 1925—The smallpox prevalent in American and Canadian cities during the first 6 months of 1925 was 4 times as deadly as the type of the disease which occurred in 1923. This year there were recorded 3.5 deaths for each 100 smallpox cases; in 1923 this figure was less than 1 death per 100 cases. In 1924 smallpox caused 1.5 deaths per 100 cases. These figures were compiled from the 643 returns of smallpox questionnaires sent to United States and Canadian cities. Birmingham, Ala., had 1,583 cases, fortunately with few deaths. Camden, N. J., with 97 cases, 44 of which died, had the highest fatality rate in the list of cities, namely 45 per cent. Smallpox in highly virulent form also prevailed in Minneapolis, Milwaukee, Detroit and Chicago.

For the states and provinces of the United States and Canada, including rural populations with less opportunity for the spread of the disease, the record of the first 6 months of 1925 shows 2.1 deaths per 100 cases, nearly twice the fatality rate prevailing in 1924 and 3 times the rate for 1923.—*Stat. Bull.*, Met. Life Ins. Co., 6:7–8 (Sept.), 1925.

Vital Statistics in Ireland—The tuberculosis death rate in the Saorstat Eireann area which was 2.53 per 1,000 during 1901–1910 fell to 1.41 in 1923, a reduction of 44 per cent. The cancer mortality rate rose from .37 per 1,000 for the period 1881–1890 to .81 for the period 1911–1914, since which time it has remained practically stationary. The low rate in the earlier years was largely due to faulty diagnosis. The death rate from all causes fell from 16.67 in 1913 to 13.34 in 1923, while in England and Wales it fell from 13.8 to 11.58, representing reductions of 20 per cent and 16 per cent respectively.—*Jour. A. M. A.*, 85:528 (Aug. 15), 1925.

Health Conditions in Hong-Kong—A report for 1923 gives the estimated population of the colony, including New Kowloon and the new territories, as 681,800, of whom 15,000 are non-Chinese. The birth rate for the year was 6.97 per 1,000 among the Chinese community (but this figure is wholly misleading, as it is impossible to register more than a portion of the births), and 23.03 per 1,000 among the non-Chinese community, as compared with 6.25 and 22.84 for 1922. Deaths from malaria numbered 674. The deaths from plague were 136, as compared with 1,071 in 1922. Smallpox deaths numbered 1,141, of which all but 9 were Chinese. There were 4,317 deaths from respiratory diseases other than pulmonary tuberculosis.

as compared with 4,863 in 1921, and 35 of these were among the non-Chinese community. Pulmonary tuberculosis claimed 1,472 Chinese and 31 non-Chinese victims, while other forms of tuberculosis represent an additional 605 deaths, making a total of 2,108, or 15.36 per cent of the total deaths among the community. Beriberi was responsible for 1,270 deaths, as compared with 892 during 1922 and 526 in 1921.—*Lancet*, 2:262 (Aug. 1), 1925.

Vital **Statistics, Montreal, 1924**—The death rate of Montreal in 1924 was 14.87 as compared with 15.67 in 1923. The birth rate increased from 31.94 in 1923 to 32.75 in 1924 and the marriage rate decreased slightly (9.24 as against 9.49 in 1923). The figures are calculated on the basis of a population estimated at 655,800. The infant mortality rate for 1924 is the lowest observed in Montreal since the organization of the bureau of statistics.—*Lancet*, 2:351 (Aug. 15), 1925.

Public **Health in Mauritius, 1923**—The population of Mauritius on December 31, 1923, was estimated to be 381,678. The birth rate in the general population was 40.9 and in the Indian population 34.9, while the death rates in the two populations were 29.6 and 28.1. These death rates were the lowest since 1891. The number of deaths due to malaria and malaria cachexia (the highest cause of death in Mauritius) was 1,979 as against 3,526 in 1922. The next highest causes of death were pneumonia (1,393) and diseases of early infancy (1,026). There were 139 cases of plague during the year, of which 118 were fatal; the largest number of cases was in Port Louis (117). There were 150 cases of enteric fever as compared with 224 in the previous year. The infantile mortality was 139.4 as against 147.9 in 1922. The climate is tropical but owing to the high elevation of the central plateau a large part of the island enjoys a temperate and even bracing climate. Cyclones are liable to occur during the months of December to April.—*Lancet*, 2:162 (July 18), 1925.

Health **Conditions in the Leeward Islands, 1923–1924**—In Antigua, one of the five presidencies constituting the Federation or Colony of the Leeward Islands, the birth rate in 1923 was 38.68. Seventy-eight per cent of these were illegitimate. The death rate was 27.56. In the Presidency of St. Kitts-Nevis, the birth rate was 41.7 in St. Kitts, 30.8 in Nevis and 28.6 in Anguilla. In Dominica, with a population estimated to be 38,632, the birth rate was 37.22 and the death rate 26,66. Illegitimate births exceeded the legitimate by 292. The death rate of Montserrat was 15.5. The general health of the colony during the year was satisfactory.

No epidemic disease occurred. The appearance of smallpox in Antigua led to the introduction, for a period of 5 months, of compulsory revaccination in St. Kitts-Nevis. These revaccinations, added to the recent primary vaccinations and revaccinations, may be regarded as satisfactory protection for the whole presidency. The campaign against yaws and syphilis was recommenced on improved lines in November, 1923. The epidemic of alastrim which had been present in the islands since July, 1922, came to an end in September, 1923.—*Lancet*, 2:162 (July), 1925.

Decline in the Birth Rate in Germany, 1924—The birth rate in Germany for 1924 was 21.1, the lowest rate of the last 5 years. The rate in 1923 was 21.7, in 1922 23.7, in 1921 26.1 and in 1913 27.7. The excess of births over deaths in Germany has decreased during the period from 1913 to 1921—from 12.6 to 8.2 per 1,000. The marriage rate in 1924 was 7.1 as compared with 9.4 in 1923, 11.1 in 1922, 11.8 in 1921 and 7.8 in 1913. Hamburg, in which the number of new dwellings erected in 1922 and 1923 was more than 3 times as great proportionately as the number erected in Berlin, showed during the last 2 years a 27 per cent increase of marriages over the prewar period, whereas Berlin presented a decrease of 7 per cent.—*Jour. A. M. A.*, 85:915–916 (Sept. 19), 1925.

Public Health in Hungary—The population of Hungary is about 8,160,000; Budapest has about one million people. The next largest towns are Szeged with 120,000 and Debrecen with 110,000. The general death rate in 1924 was 20.1 as compared with 19.2 in 1923, 20.8 in 1922 and 19.3 in 1921. The birth rate has fallen from 27.9 in 1921, 29.4 in 1922, 28.4 in 1923 to 26.3 in 1924. The 1924 marriage rate was 9.0. Since smallpox is adequately guarded against, only an occasional case occurs from time to time. This satisfactory result is doubtless due to compulsory vaccination during the first year of life, and again shortly before admission to school. Typhus exists rather abundantly and trachoma is a serious problem.—*Pub. Health* (London), 38:361–364 (Sept.), 1925.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Color of Reservoir Water—Investigation of Connecticut reservoirs indicates that after 5 or 6 years the reservoir gets conditioned, although for several years longer there will be a gradual decrease in color content of the stored water. Data presented substantiate conclusions of F. P. Stearns, that when an unstripped reservoir is first filled, the water acquires after standing for a time, considerable color, chiefly from vegetable matters which have been flooded.—Caleb M. Saville, *Pub. Works*, 56:276 (Aug.), 1925. A. W. B.

Operation of Water Purification Plants—Methods of procedure and standards of design employed by the Sanitary Engineering Division of the Illinois Department of Public Health in passing on plans for filter plants are described.—S. T. Baker and H. F. Ferguson, *Canadian Eng.*, 49:435 (Oct. 6), 1925. A. W. B.

Comprehensive City Planning Follows Piecemeal Progress in Des Moines—Constant effort by a group of citizens originally known as the Civic Improvement Committee brought about piecemeal improvements. In 1916, the City Council named the members of this committee as the Town Planning Commission. The Commission was successful in April, 1923, in obtaining legislation necessary for zoning. The Zoning Commission appointed August 4, 1923, has with the assistance of outside experts developed a comprehensive plan with which the city's development will no longer be a matter of chance.—James B. Weaver, *Am. City*, 38:349 (Oct.), 1925. A. W. B.

Successful Tests on New Incinerator at McKee's Rocks, Pa.—In a test run under maximum load conditions the incinerator completely burned 22 tons of wet garbage in 2 hours. Combustion was so complete that no gases were visible in the combustion chamber and no unburned gases or waste were given off from the stack.—*Am. City*, 38:387 (Oct.), 1925. A. W. B.

Typhoid Outbreak Due to Cross-Connections—An outbreak of typhoid fever occurring at Winona Lake, Ind., during the latter part of June, was traced to cross-connections between the public water supply and a polluted canal water. This is another instance of a leaking valve being responsible for the outbreak and emphasizes the danger of permitting cross-connections to exist.—*Am. City*, 38:395 (Oct.), 1925. A. W. B.

Westermoreland's New Water Supply—For 2 years the water works system installed 10 years ago had been without water as the supply of the original well was exhausted. This year two propositions were offered the town, one to obtain a supply from a stream and filter it, at a cost of $24,000, and the other a well supply guaranteeing a minimum of 8,000 G. P. D. to cost $12,325. The latter proposition was accepted and official test of the 2 wells on June 8 registered 30,000 gallons per 24 hours.—*Pub. Works*, 56:287 (Aug.), 1925. A. W. B.

Filters for Chicago's Water Supply—Owing to increasingly unsatisfactory condition of the raw water, the chlorine doses have been increased until objectionable tastes have occurred. Preliminary plans call for plants projecting into the lake, drawing raw water from and discharging filtered water into existing tunnels.—*Pub. Works*, 56:293 (Aug.), 1925. A. W. B.

Los Angeles Garbage Feeds 40,000 Hogs on Fontana Farm—For almost four years all of Los Angeles garbage has been shipped in gondola cars by rail 50 miles to the hog ranch where 40,000 hogs are fed on garbage exclusively. Feeding on concrete floors throughout the life of the animal makes it possible to prevent scattering of garbage; makes for a very sanitary condition; and does away with lodgement for rats.—*Eng. News-Rec.*, 95:208 (Aug. 6), 1925. A. W. B.

INDUSTRIAL HYGIENE

DRS. EMERY R. HAYHURST AND NELSON C. DYSART *

Pneumoconiosis—Three Cases—This bulletin is offered pursuant to the policy of the New York State Department of Labor to acquaint, through its Bureau of Industrial Hygiene, the medical profession, employers and employes with the industrial hygiene side of conditions as they affect workers. Legislative relief is desired for those exposed to silica dust. The present pamphlet describes typical cases taken from the Buffalo City Hospital where exhaustive studies were made of the histories, pathology, and post-mortem findings of the cases. X-ray pictures are also reproduced as well as various charts and drafts, colored plates, etc. Not suspecting the true causes of these afflictions there was an apparent discrepancy between the ward and autopsy findings. This is largely due to the failure of the medical profession to recognize pneumoconiosis and to call such cases tuberculosis. It is true that tuberculosis is generally a complication. The bulletin gives the case histories complete of a sand-blaster, a worker on a crushing machine in a stone quarry—both of which showed *silicosis* as the underlying cause of death—and a common "laborer" whose cause of death was *anthracosis*. The mistakes and "guesses" at diagnosis of each case through their clinical histories while alive are admirably portrayed in the bulletin which is for free distribution to all interested. Special credit should go to Dr. Walter S. Goodale, Superintendent of the Buffalo City Hospital, Dr. Wm. F. Jacobs, pathologist, Dr. Robert S. McBirney of the Bureau of Industrial Hygiene, and many others for the collection of the data and work necessary.—Bureau of Industrial Hygiene, *Special Bulletin, N. Y. State Dept. of Labor,* 124 E. 28th St., New York City (1925).

Occupation and Tuberculosis—This article considers particularly the solution of the case of the tuberculous person who must work, and the surroundings to which he must go upon his return from sanatorium conditions. The experience of the past 20 years with regard to the employment of tuberculosis patients is summarized: (1) Patients were first advised to find occupation in the open air, many times to the detriment of the patient's health, and the fact that there are occupations which can be practiced under workshop conditions with happy results was not recognized; (2) the idea of learning a new occupation has usually proved unsuitable except in the case of certain limited ones; (3) employers were not willing to take on tuberculous workmen; (4) most patients have proved unable to manage a business and must work for others; and (5) the patient is expected to put in a full day's work at a normal working rate without reference to his physical fitness which is a rock upon which our post-sanatorium patients split. It seems clear that the problem can only be dealt with by means of *ad hoc* schemes for employment under sheltered conditions. The problem is apparently less pressing in smaller towns and country districts. The "Altro" workshop experiment of the Jewish Tuberculosis Committee of New York has proved its usefulness and has finally erected its own specially designed workshop where each patient works under medical rather than industrial conditions. In England, Mr. G. W. Allen organized the "factory in the fields" in Leeds about 5 years ago. Firewood splitting machines, a window-cleaning brigade, boot repairing, brush making, and a variety of similar industries were started. In 1923 the Central Fund established the "Spero-Leather Workers." Wages are paid at rates varying with the experience of the worker. The general conclusions from all of these schemes are given. The immediate need appears to be for the carrying out of a number of experimental schemes without much likelihood that any one may be run without making some considerable financial loss.—J. E. Chapman, *J. Roy. San. Inst.*, XLVI:No. 4, 119 (Sept.), 1925.

* The editor of this Section will gladly receive contributions from members. Please address all communications to Hartman-Ohio Bldg., Columbus, Ohio.

Newark Health Department Reports on Industrial Hygiene—For the year 1924 the City Health Department investigated 21 cases of lead poisoning, one of arsenic poisoning, and 8 other industrial cases. Industrial inspections included 716 of factories, 95 with other inspectors, 43 out of the city, 42 of poultry slaughter houses, 50 night inspections, 44 noise complaints, 60 Spanish and Portuguese lodging houses, 35 fat rendering plants, and 3,631 official calls. Re-inspections were made of 334 factory instances, 15 poultry slaughter houses and 17 fat rendering plants.—*Newark Health Dept.*, Fortieth Annual Report, 1924.

Functional Nervous Disorders—The author gives a popular discussion of this question and considers its relation to industry and merchandizing and particularly the salesman and craftsman. There are recognized the disability types and the maladjustment types. Typical case histories are given. In a group of store workers numbering about 4,000 in a 6-months period, the diagnosis of functional nervous disorder was made 506 times—these disorders being fourth in order of frequency among the complaints treated in the store health department. During the same period 1,546 days were lost from these disorders by 123 individuals. The author does not feel that ignoring the facts is a remedy. Fear is not a remedy. In attacking the problem in practical ways close attention must be given to the individual case, particularly, things in the personal history which are unnerving to the individual, then attention to the environment. Many a neurotic salesman or saleswoman could find more appropriate and satisfying occupation in a machine shop or on a farm. In the end "compromise" is more or less the true solution for both employer and employe.—H. W. Stevens, Jordan-Marsh Co., *The Commonhealth*, 12, 2:37 (Apr.-May-June), 1925.

Hygienic Conditions in the Printing Trades—The present bulletin is the beginning of the publication of the results of a joint survey by the International Joint Conference Council of the Printing Industry and the Bureau of Labor Statistics. It represents that part of the work which the Bureau of Labor Statistics agreed to do. A description of the various operations is included: composition, type founding, plate making, press work, binding, ink grinding, roller making, and auxiliary work. The matter of housing of trade plants, lighting, ventilation, sanitation, welfare, personnel, hazards, and accidents, are analytically discussed. There were 536 establishments inspected representing eastern, southern and western sections of the country. The findings are the viewpoint of one individual and may be either too critical or too lax, but are uniform. There were 81,314 employes in the plants inspected, of whom 1,363 were over 60 years of age and 21.43 per cent were females. The actual number of cases of sickness and accidents reported by employers was surprisingly small, reasons for which are given in the text: tuberculosis 29, lead poisoning 14, other occupational diseases 15, and accidents 139. At the same time the author calls attention to the fact that Dr. Louis I. Harris, in New York, had examined approximately 10 per cent of the members of the Typographical Union which has a total membership of about 9,000 and found about one-fifth of those examined affected by lead poisoning in some degree, after all possible doubtful cases had been eliminated. His report is due later. The author lays great stress on the very frequent breathing of combustion products from gas flames used about printing presses, as a possible underlying cause of tuberculosis which appears to be excessive in pressmen as compared to others. (It is not clear whether the author has differentiated symptoms due to constant overheating, etc.—E. R. H.)—S. Kjaer, *Bull. 392, U. S. Bur. of Labor Statistics*, Sept., 1925, 229 pp.

Annual Hygiene Report, National Cash Register Company—This mimeographed bulletin covers the year 1924 and represents this company's coöperation with the U. S. Public Health Service which is studying absences of all kinds in a number of factories. There were 437 accidents during the year, which was 13.8 per cent less than the preceding year, and caused an average of 1.4 hours lost time as compared with 1.9 hours last year. Only 123 were lost time cases and 42 were compensation cases, that is, where more than one week of lost time was concerned. These latter received $8,138.47. There were 11 accidents causing permanent disability, one of which was the loss of an eye and all others hand injuries. These cases caused 2,452 hours lost time and $4,914.95 compensation cost. The lost time because of sickness shows a decrease of 10,760 hours, or

6.7 per cent over the past year, due largely to the absence of an epidemic of any kind. Respiratory diseases as usual caused the greatest loss of time. This is the first year that a factory department instead of an office department leads in lost time because of sickness. Lost time because of sickness will average 23.5 hours per employe. This is an increase of .2 per cent. There were 2,647 examinations of applicants including reinstatements made in the doctor's office, of which number 320 were women. The total rejections were 22, treatments 3,970, and consultations 1,603. Laboratory examinations of urine and blood, sputum, and pus, totaled 188. The nurses' office reported a total of 21,580 services or attentions and the dental dispensary a total of 6,937 among which 1,670 were extractions, 1,264 were X-rays, 1,458 first-aid treatments, etc. The total number of calls to the hygiene division during the year was 41,265, and the estimated value of the services rendered $75,456.25. A detailed report is given concerning all accidents. The tuberculosis report covered 5 persons towards whose expense the company paid $736.00. There were 8,147 cases of sickness with maximums in February and November, and minimums in summer months—the total hours lost being 147,545.—*Hygiene Division Annual Report,* National Cash Register Co., Dayton, Ohio, 1924.

The **Pyrotannic Acid Method for Carbon Monoxide in Blood and in Air**—This paper discusses the methods for quantitative estimation of carbon monoxide and its use in the diagnosis and investigation of poisoning by this gas. The method is described as quick and accurate. The only infallible diagnosis of CO poisoning is made by examining the blood. Descriptions of methods and apparatus with illustrations are given in detail. Symptoms of CO poisoning more or less parallel the blood saturation as determined by this method.

The *first stage* is characterized by "tightness across forehead, dilation of cutaneous vessels, headache (frontal and basal), throbbing in temples, weariness, weakness, dizziness, nausea and vomiting, loss of strength and muscular control, increased pulse and respiration rates, and collapse. The same individual seldom experiences all of these symptoms. In some cases the poisoning may proceed to the stage of syncope without the victim feeling any of these symptoms; in fact, it is a frequent occurrence if the poisoning has been rapid."

In the *second stage* there are "increased pulse and respiratory rates, fall of blood pressure, loss of muscular control (especially sphincters), loss of reflexes, coma usually with intermittent convulsions, Cheyne-Stokes' respiration, slowing of pulse, slow and shallow respiration, cessation of respiration, death."

Symptoms depend upon personal idiosyncrasy and physical condition of the victim. The symptoms decrease in number with the rate of saturation. Activity or non-activity plays an important part in the character of the symptoms. "It is common to find groups of men, some of whom will be dead and others conscious, although all have been exposed to the same concentrations of gas for the same period." Blood saturated to 10 per cent shows no symptoms; to 20 per cent, tightness across forehead and possibly slight headache; to 30 per cent, headache and throbbing in temples; and beyond this severe headache, weakness, dizziness, fainting, convulsions and coma come on with death possible from saturations of 60 per cent or more. The pathology, after-effects, preventive measures, and emergency treatment are discussed.

The quantitative determination of CO in the air is next given in detail. The accuracy of the method as controlled by combustion tests is very good. "The results obtained are within the limits of error allowable from the standpoint of the purpose to which the method was devised." A compact field apparatus is described and should be of great use in investigations of CO poisoning.—Sayers and Yant, *Technical Paper 373,* U. S. Bur. of Mines, 1925.

"Hydrogen Sulphide"—This single-page placard is No. 2 in the Series of Safe Practice Sheets put out by the National Safety Council and describes the substance as "stink damp," dangerous in gas form only, enters the body through respiration, is toxic in amounts from 0.01 to 0.10, producing subacute or acute symptoms respectively, is non-accumulative in action with susceptibility varying. Acute symptoms and chronic symptoms are stated in brief with medical treatment, preventive methods, and reference literature. Prevention consists in adequate ventilation while medical treatment concerns especially the inhalation of oxygen containing 5 per cent carbon dioxide in acute cases and symptomatic treatment in chronic cases.—*National Safety News,* Aug., 1925, p. 45.

FOOD AND DRUGS

HARRY W. REDFIELD, PH.D.*

COMMENTS

Turbidity Test Attacked—In the November issue of *Cotton Oil Press,* David Wessen writes an open letter to Armin Seidenberg in which, without reservation or stint, he points out the fallacies in Seidenberg's paper, upon which we commented in our November notes. A reprint of Mr. Wessen's letter may be found in the October 28 issue of *New York Produce Review and American Creamery.* Affecting as it does the very important question of the ration for 30,000,000 milk cows in this country, and the cost of milk, the controversy which Seidenberg has stirred up is being closely followed by all interested in the milk question, which is one of our leading public health topics.

Coffee Drinking—The Mellon Institute of Industrial Research is carrying on a scientific investigation of the rôle of hot beverages in the diet, in which the medical as well as the chemical literature has been examined for pertinent opinions and previous experimental findings. It has been found that certain questions relating to the general subject appear to be answered definitely and convincingly in some of the published reports, from which the following statements have been compiled:

Coffee Drinking by Children—Coffee drinking by children has long been regarded with disapproval by pediatricians. There are a number of objections to the practice, among which its harm to the nervous system is important. It is entirely conceivable that the use of caffein-containing beverages by the child will lead to the production of serious nervous defects later in life.

In their recent book, *Safeguarding Children's Nerves* (1924), Drs. Walsh and Foote clearly indicate that there is an increasing nervous instability of American people as demonstrated by the failure of many of our troops to withstand the stress and strain of active service. It is possible that the early use of coffee has had a contributing part in causing the lack of nervous balance that is exhibited by so many adults in this country.

The drinking of coffee in the United States is steadily increasing, and the average annual consumption now amounts to 13 pounds or more per capita. No small portion of this coffee is used by children, as shown by a study of the diet of a large number of children of preschool age at Gary, Indiana. This survey was made by the Children's Bureau of the United States Department of Labor. The report mentions that "two-thirds of the entire group were found to drink coffee habitually, and 40 per cent to have it more than once a day. Not only so, but in certain of the groups of foreign-born parentage, coffee was drunk by more than 90 per cent of the children, and three-fourths of the Polish group had it two or more times a day."

In 1912, C. K. Taylor, a psychologist, made a study of coffee drinking by school children. He found that out of a group of 464 children, over 70 per cent were coffee drinkers. Moreover, and more important still, he discovered that those children who drank the most coffee received the lowest grades. There is no doubt that coffee drinking is generally deleterious to the nervous system of the child. But the greatest harm done to children by this drink is its replacing milk in the diet. The Gary report referred to above states that coffee drinking by children "appears to have been inversely proportional to the use of milk. Not only do the schedules show about the same percentage of children drinking coffee as those lacking milk, but a comparison of coffee drinking by milk groups shows the use of coffee to increase markedly as the amount of milk decreases." Commenting upon the disastrous effect of replacing milk by coffee, the report states further: "To leave out milk and substitute coffee plays havoc with any diet, whatever may be its redeeming features."

It is a well known fact that children easily acquire a taste for coffee and are less willing to drink milk after being permitted to use coffee. Miss Lucy H. Gillett, Superintendent

* Address all comments, notes and suggestions to 641 Washington Street, New York City.

of the Nutrition Bureau of the New York Association for Improving the Condition of the Poor, says in this connection that "children should never be given tea or coffee, not even to flavor milk. They will more often like milk if they are not first taught the combination of milk and coffee."

There are two important reasons why coffee should not be given to children. First, it has the harmful effect of crowding milk out of the dietary of the child, and second, it is an undesirable and unneeded stimulant.

Coffee Drinking by the Aged—The human body with advancing age has a marked tendency to become more sensitive to stimulants such as caffein, and the excitement of the nervous centers is borne less well in senescence than in the prime of life.

Professor Oliver T. Osborne recently pointed out (*Medical Journal and Record*, 120 (1924), supplement, CLXIII) some of the dangers that are liable to accompany a tea or coffee habit in old age. He says: "The action of caffein (on the aged) is to increase general nervous irritability, cause polyuria, and especially to stimulate the thyroid and parathyroids to abnormally increased activity, with the result of more nervous irritability and muscular irritability and trembling. Caffein often raises the blood pressure, where such an increase of blood pressure is not needed." He states further that coffee and tea are likely to increase the production of uric acid and that this substance is liable to irritate the kidneys and cause muscle and joint pains in old people.

Dr. Malford W. Thewlis, in the second edition of his book *Geriatrics*, calls attention to the increased susceptibility of old people to the stimulating action of tea and coffee. He urges a curtailment of the use of these drinks in senescence. The use of caffein-containing beverages with the evening meal he considers very liable to interfere with sleep. Dr. Thewlis directs notice to the supersensitiveness which old people frequently exhibit towards certain drugs; he believes that the old rule that "children and the aged cannot stand large doses" is not without foundation. It is not at all uncommon to hear individuals past the prime of life say they can no longer drink coffee because it keeps them awake.

It is generally known that caffein stimulates the heart's action and thus tends to raise the blood pressure. While caffein is a vaso-dilator as well as a heart stimulant, its dilating action upon the hardened vessels of the aged will be less effective than in the case of younger persons; hence the increased pressure due to the heart's action will not be compensated for by relaxed arteries, and the blood pressure will accordingly increase.

Finally it can be stated that in old age sedatives rather than stimulants, such as caffein, are called for.

Belly-Blown Sardines—Dr. L. H. Almy of the U. S. Bureau of Chemistry has found that the rapid decomposition of sardines, in which the stomach is full of minute shrimp and other feed before and during the process of canning is due principally to the action of a proteolytic enzyme.

Synthetic Soft Drinks—Over 5,000,000,000 glasses or bottles of soft drinks, exclusive of cereal beverages, are consumed annually in the United States, a large proportion of which are imitation fruit beverages. Such imitation fruit drinks have a legitimate place on the market if they do not masquerade as true fruit products. They are palatable, usually prepared under sanitary conditions, and the sugar they contain gives them food value.

Imitation fruit beverages do not contain fruit juices, but are made by adding artificial fruit flavor, color, and a fruit acid to sugar sirup, which is mixed with carbonated water in the proportion of 1 fluid ounce of flavoring sirup to 5 or 6 ounces of carbonated water. The refreshing sour taste of these drinks is imparted by citric acid which is obtained from lemons, or by tartaric acid which is a by-product in the manufacture of wine, or in the case of phosphates, by phosphoric acid, which is a mineral acid.

Most of these imitation drinks are made and dispensed locally and are, therefore, under the jurisdiction of state laws.

The imitation fruit drink of 10 years ago usually had an odor and flavor suggesting banana, and was seldom mistaken for a fruit-juice beverage, but the modern artificial flavors so closely simulate the odor and flavor of the fruit named on the label that detection of their artificial character by taste is difficult. These flavors are the achievement of skilled chemists who have developed them by chemicals formerly employed in making perfumes. For instance, the odor of synthetic methyl anthranilate is hardly distinguishable from that of freshly crushed Concord grapes, and this chemical is used in most of the so-called grape drinks on

the market. Artificial strawberry, cherry, raspberry, and peach flavors, which carry a strong suggestion of the odor and flavor of the fruit after which they are named, can now be purchased. The quantity of flavor in a glass of the finished beverage is extremely small—less than 5 drops.

Amaranth furnishes many of the shades of pink and red of these drinks while naphthol yellow and orange are used to produce the orange-colored beverages. The manufacturers in those states where coal-tar colors are not permitted use colors which are derived from other sources, such as cochineal and caramel.

Since freshly pressed fruit juice has a cloudy or turbid appearance, due to particles of pulp in suspension, some manufacturers called upon the chemists to produce this effect in the imitation fruit beverage. The chemists solved the difficulty by emulsifying the flavor, usually an essential oil, with gum acacia and other gums, starch, etc. In this process the oil is broken up into minute globules which are kept from uniting with one another by a thin film of the emulsifying agent surrounding each globule. When an emulsion flavor of this kind is used, the finished beverage will have a cloudy appearance resembling that of freshly pressed fruit juice.

All soft drinks should be labeled and sold in such a way that the purchaser will not be misled as to their composition. Those which imitate the taste and appearance of true fruit beverages should be plainly labeled as imitations.

Cow Versus Motor—Professor H. P. Davis, head of the Dairy Husbandry Department of the State College of Agriculture, takes direct issue with Henry Ford with respect to the future of the dairy cow. Mr. Ford recently predicted that in time the dairy cow will rank with the dodo in importance in the animal world.

"Mr. Ford's idea apparently was," said Mr. Davis, "that machinery will be developed that will produce milk and cream more efficiently and economically than the dairy cow. Mr. Ford's mechanical genius will be readily conceded, but dairy husbandry experts will insist that until Mr. Ford can produce an engine that will better utilize the energy in the fuel it consumes than does the dairy cow, his opinion ought not to control the situation.

"The fact of the matter is that Mr. Ford's greatest triumph, the engine that motivates his car, utilizes but 18 to 20 per cent of the energy contained in the gasoline it consumes, whereas the ordinary beef steer uses 50 per cent and the dairy cow 70 per cent of the energy stored in the feed consumed."

Skippers in Cured Meats—An investigation of the cheese skipper, the larva or maggot of a diminutive and very active fly that is particularly injurious to smoked meats has been conducted by Perez Simmons of the U. S. Bureau of Entomology. This study has brought out the following new data regarding the life history, habits and control of the insect.

"Tests have shown that wire cloth of 20 meshes per inch, formerly recommended to exclude the adult flies, is not sufficiently fine for that purpose. The flies may be excluded, however, by the use of wire cloth of 30 meshes per inch. Rooms or closets in which cured meats are stored should be carefully screened. The wrapping of smoked meats is an excellent method of protecting them from skippers, but in warm weather meats should be protected by screens prior to wrapping in order to be sure that no eggs are laid before the wrappings are applied.

"Besides ham, bacon, and cheese, the insect in its larval stage attacks dried beef, salt pork, fish, carrion, bones, and even human cadavers. Stores of bones constitute breeding places for skipper flies, and care should be taken to avoid as far as possible the storage of such inedible materials in the neighborhood of stores of cured meats. The prevention of infestation is the essence of the control of this pest.

"Larvae are exceptionally resistant to insecticides and to extremes of temperature. Half-grown maggots subjected to a temperature of 5° F. for 64½ hours were able to continue development after removal to favorable conditions. Full-grown larvae recovered activity after experiencing four hours' heating at 122° to 124° F.

"They are able to resist the effects of starvation for months, even in hot weather.

"In order to free infested rooms of all stages of the skipper, infested meats should be removed and the empty rooms fumigated with hydrocyanic acid gas. It is sometimes possible to remove small clusters of larvae from meats by trimming out with a knife but no satisfactory ways of ridding infested meat of all stages of the insect have been found.

"The flies mate immediately after emergence from the puparia and fertile eggs may

be laid 10½ hours later. The maximum number deposited by a single female was 480, but the average is about 140, laid over a period of 3 or 4 days. An abundance of fluid or semi-fluid food, preferably the moisture of juicy ham, is a prerequisite to abundant oviposition. The flies ordinarily live but 5 to 8 days in hot weather, but life is sometimes prolonged to more than a month during cool periods.

"The eggs hatch in about 24 hours at temperatures of 80° to 90° F., and the larvae feed continuously for 5 days, molting twice during this time. The favored food of the maggots is juicy ham, not including the fat parts, and in whole hams they quickly penetrate between the muscles to the center, making inspection and excision a difficult task.

"When full grown, the larvae leave their food and seek a dark, dry, close place for pupation. In their migration they employ two modes of progression—crawling and skipping. The puparium is formed rapidly, and in 5 days the fly emerges, completing the life cycle in hot weather in about 12 days.

"Although its ravages as a cheese pest have gradually lessened, it has now become the most important among the insects which infest cured meats, large quantities of which are lost each year in this country. Fortunately the old custom of eating skippered cheese appears to be dying out. When the larvae are accidentally or intentionally swallowed, usually in connection with the consumption of cheese, they may pass through the alimentary tract alive, their presence in the intestines causing much suffering from myasis."

Preservation of Fruit Juices—The Office of Horticultural Investigations, Bureau of Plant Industry, has been carrying on studies of the whole problem of the improvement in quality of beverage juices for the past 6 years. The problem has a number of distinct phases, some of which are completed, while the investigational work upon others is still in progress.

One of the first problems investigated was that of developing a method of clarification which would give a permanently clear, attractive product. Such a method was successfully developed and is described in *Department Bulletin 1025*, issued January, 1922. This method is now in use by a considerable number of firms and has proved highly satisfactory, as it materially reduces the cost of manufacture, while producing a superior article which sells at a price materially higher than that of ordinary untreated juice.

Another phase of the investigation which has reached an advanced stage is a study of the chemical changes produced by pasteurization in both apple and grape juices and of methods of reducing these changes to a minimum by improved methods of treatment prior to pasteurization, so as to preserve the composition and quality of the fresh juice in the pasteurized product.

ABSTRACTS

Chemistry of Pectin and Its Industrial Applications—This is a review of the literature on the chemistry, industrial manufacture, economic aspects, and uses of pectin. A list of 16 references to the literature is appended.—W. H. Dore, *J. Indust. & Engin. Chem.*, 16, 10:1042–1044, 1924.

Iron Deficiency and Human Disease—This is a general discussion of the possible bearing of some of the results obtained in the author's studies of iron deficiency in pigs to human pathology, including chlorosis, rickets, and wet beriberi.—J. P. McGowan, *Lancet*, II, 21:1060, 1061, 1924.

The Rôle of the Liver in the Mechanism of the Hypoglycemic Action of Insulin (trans. title)—In this investigation of the possible rôle of the liver in the action of insulin, a comparison was first made of the extent of the lowering of the blood sugar of rabbits following the injection of insulin in the portal vein or in the general venous circulation. From the results of 3 experiments it was concluded that the action of the insulin is slightly more marked and prolonged when the insulin is injected in the mesentery than in a vein of the general circulation.

A comparison was then made of the content of sugar in the subhepatic vein and in the arterial blood of dogs during the course of insulin hypoglycemia. In the first animal the content of sugar in the subhepatic vein was higher than in the carotid artery following the injection of insulin, and in the second about the same but not lower. This is thought to indicate that in insulin hypoglycemia glycogenolysis is not interfered with.

Finally, the effect upon insulin hypoglycemia of the removal of the liver was studied in frogs after preliminary experiments had shown that these animals were suitable for such a study.

The removal of the liver instead of lowering the action of the insulin was found to accentuate it.

It is concluded that the liver does not play an active rôle in the mechanism of the action of insulin in normal animals.—H. Simonnet, *Bul. Soc. Chem. Biol.*, 6, 8:742–758, 1924.

Experimental Studies on the Vitamin Content of Milk (trans. title)—An investigation into the cause of the large number of cases of infantile scurvy in Berlin since the war showed the ordinary market milk and the special children's milk to be very deficient in vitamin C as compared with 24-hour-old raw cow's milk. The ordinary market milk of the city is said to be not only pasteurized but frequently to be treated with hydrogen peroxide, while the special children's milk is treated by the biorization process, consisting in heating the milk to 72° C. in a fine spray.

Growth curves of guinea pigs on the different forms of milk as the sole source of vitamin C are reproduced, together with one on raw fresh goat's milk. This curve indicates a lower content of vitamin C in fresh goat's milk than in fresh cow's milk. This is suggested as a partial explanation of the so-called goat's milk anemia observed in children fed on this milk.—L. F. Meyer and E. Nassau, *Wien. Klin. Wchnschr.*, 3, 47:2132–2135, 1924.

Report of the Food Investigation Board for the Year 1923—"Eggs can be over-cooled readily. When this is avoided their true freezing point, which undoubtedly varies slightly with different eggs, lies between —0.45 and —0.65° C. (31.19 and 30.83° F.). At any temperature below this eggs can be frozen to the point at which they become sufficiently solid to permit of their being sawn through. If the temperature of the egg at no time falls below —6° C. (21.2° F.) the contents recover their fluidity on thawing. If the temperature falls below —6° both the yolk and white are permanently changed, the former having a thick, pasty consistency when thawed."—W. B. Hardy *et al* (Gt. Brit.), Dept. Sci. and Indus. Research, *Food Invest. Bd. Rpt.*, 1923. pp. IV+77.

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CHILD HYGIENE

TALIAFERRO CLARK

Ophthalmia Neonatorum—A report on ophthalmia neonatorum by the medical officer of health of the borough of Swindon, England, is interesting from several points of view. In the first place, it is not unlikely that many physicians refrain from the routine use of a prophylactic in the eyes of the newborn because of the implied stigma of venereal disease infection; and that other physicians, apparently imbued with an undue optimism, do not employ a prophylactic because in their belief certain mothers are free from infecting organisms. Out of 15 cases of ophthalmia neonatorum notified in this borough during 1924, as compared with 34 cases during the preceding year, 9 of them and also 8 other non-notified cases were treated at the child welfare center. Bacteriologically, all of the notified cases were caused by gonococcus, and of the non-notified cases 1 was caused by gonococcus, 3 by pneumococcus, 2 by "bacilli," 1 by streptococcus, and 1 was sterile. In other words, the gonococcus was not the only organism which caused inflammation of the eyes of the newborn in this series of cases, and, therefore, the occurrence of ophthalmia in the newborn is not necessarily indicative of previous venereal disease infection of the mother.

In this country, practically all states require by law or regulation notification of cases of ophthalmia neonatorum occurring within a definite period after birth. This period varies greatly ranging from 24 hours to 6 months and in 1 state at any age. This is a matter of importance because the duration of the notifiable period has a distinct bearing on the conservation of vision. According to Brewer's observations, gonorrheal ophthalmia generally develops about the third day of life and is, therefore, little likely to escape notification, if the obstetrical attendant is properly trained and complies with the law. On the other hand, other forms of gonorrheal ophthalmia of the newborn do not develop until the tenth or eleventh day and so may occur after the obstetrical attendant has left the case. In his experience these late cases are frequently more serious than the early ones, although they are not accompanied by the same amount of discharge or as severe swelling of the lids. The cornea is attacked at the onset and the complication of iridocyclitis without perforation occurs. It has been found that among blind school children more have lost their sight from this form of gonorrheal ophthalmia than the more common type which develops early.

Another point of importance developed by this writer is the use of salts of silver in the newborn as prophylactic. He objects to the routine use of prophylactics on the grounds that this practice is liable to produce a false sense of security and lead to carelessness, and that preparations of silver may injure the cornea. He states that in his somewhat large experience nitrate of silver seems to do more harm than good, and as regards argyrol, protargol, colossal silver and similar preparations, though less objectionable, they are apparently less effective.

"The evidence is pretty definite that prophylactics fail; for cases of ophthalmia, both gonorrheal and otherwise, have occurred in the maternity home in spite of the use of a prophylactic," probably due to the failure of a drop of the prophylactic to reach the fornix, though another possible explanation is that the infection of the eye may not occur at delivery but at any time during puerperium. This opinion is contrary to the experience of many of the state boards of health in the United States. There is increasing evidence that in this country there has been a considerable reduction in the number of cases of ophthalmia neonatorum since the rather general adoption of state laws making mandatory the instillation of a prophylactic in the eyes of the newborn.

Mention is made of the use of gonococcal vaccination in the treatment of ophthalmia neonatorum. The author states that in two of the most formidable cases dealt with during the past year gonococcal vaccination was used in

a way which is not generally adopted and it produced remedial effect which he had never seen under any other form of treatment, that is, rapid healing of the corneal ulceration during the acute stage of the disease without perforation occurring.—Dunstan Brewer, *Med. Off.*, Sept. 19, 1925.

Breast Feeding—The First General Congress on Child Welfare considers breast-feeding the only proper method of nourishment except where medical advice is opposed to this course. No woman should be employed as a wet-nurse unless she has nursed her own child for 5 months (Resolution Adopted August 28, 1925).—*Save the Children Fund International Union*, Sept. 10, 1925.

Weight of Newborn and Nutrition of Mother—Abels' statistics show a lower weight of the newborn babies of undernourished mothers. The pregnancy also lasts a few days longer. The lack of vitamins has an influence also in experiments. He discusses the possible therapeutic utilization of the data presented.—H. Abels, *Med. Klin. Berl.*, Feb., 13, 1925 (Abstr. Jour. A. M. A., Apr. 11, 1925).

Uncontrollable Vomiting of Pregnancy—Ruiz Viso reports a case, rebellious to all other measures, in which the tendency to vomit was arrested at once by one subcutaneous injection of 2 c.c. of the blood serum from a healthly pregnant woman. Four injections of the serum were made in all, on alternate days. The vomiting had begun 20 days after her last menstruation and had continued into the third month.—*Gaceta Medica de Caracas*, Dec. 31, 1924 (Abstr. Jour. A. M. A., Sept. 19, 1925).

Goat's Milk in Infant Feeding—In view of the inconclusive data showing the superiority of goat's milk to cow's milk for infant feeding, experiments were undertaken to determine the nitrogen and mineral balances in infants receiving cow's and goat's milk. "The criterion of the efficiency of any milk mixture for infant feeding would seem to be, in part, the amount of the various essential building nutrients, calcium, phosphorus and nitrogen, retained, since growth is dependent on the retention of given amounts of these." Accordingly, the results of these experiments are evaluated, in the absence of available data, on the assumption that other things being equal the food best suited to infant nutrition is that which results in the largest retention of building substances. Determinations were made of the amount of calcium, phosphate and nitrogen retained in a given period by normal infants fed both cow's milk and goat's milk respectively.

From the standpoint of calcium utilization, the results of this study did not show that goat's milk is superior to cow's milk, nor did a study of the phosphate retained. The urinary phosphates in all infants receiving goat's milk was higher during the period fed on goat's milk than when they were receiving cow's milk, even though the phosphorus ingested (in 2 cases) was no higher than the corresponding period when they were receiving cow's milk.

"The calicum and phosphorus balances during the goat's milk periods did not indicate that the inorganic moiety of the goat's milk was superior to cow's milk. Nor did the ratio phosphorus to calcium retained in infants receiving goat's milk suggest that this is better than cow's milk."—Amy L. Daniels and Genevieve Stearns, *Am. J. Dis. Child.*, Sept., 1925.

Elimination of Microbes by Human Milk—None of 8 infants, fed at the breast by women with scarlet fever, contracted the disease. Colon bacilli were found in the milk of a woman with sudden fever and digestive disturbances. The condition of the nursling was not affected. In a case of typhoid fever the specific bacillus was detected in the milk on the eleventh day of the disease. The nursling, aged 25 days, died 2 weeks afterward with signs of typhoid. Examination of the milk in a case of cerebrospinal meningitis revealed no microbes.—T. Moronesco and A. Jonesco, *Compt. rend. de la Cosiete de Biol.*, May 1, 1925 (Abstr. Jour. A. M. A., July 4, 1925).

Ultraviolet Rays in Treatment of Fissures of the Nipples—Chatin treated with the quartz mercury lamp 12 women for slight fissures of the nipples. The irradiations were made every second day, starting with 2 minutes; the exposures were gradually prolonged by 2 minutes, reaching finally 10 minutes. The pain was sometimes relieved after one exposure; the healing of the cracks was rapid, and recovery was complete in 1 or 2 weeks.—P. Chatin, *Bull. de l'Acad. de med.*, Paris, July 21, 1925 (Abstr. Jour. A. M. A., Sept. 5, 1925).

Immunization of Infants Against Diphtheria—Ribadeau-Dumas and his coworkers conclude from tests with anatoxin vaccination,

that infants, under 4 months, are refractory to vaccination against diphtheria, since the injections do not enhance the antitoxic property of the blood. Anatoxin vaccination of pregnant women did not influence the antitoxin content in the blood of the newborn, and therefore no prophylaxis of the newborn can be attained by vaccination of the mother against diphtheria. The same may be true for other infections.—*Bull. Soc. med. d. hop. de Paris,* July 17, 1925 (Abstr. Jour. A. M. A., Sept. 19, 1925, p. 933).

Comparison of Fresh Cod-Liver Oil with Prepared Concentrate—Based on the results of experiments made for the purpose of establishing a quantitative relationship between the concentrate and the fresh cod-liver oil, it is evident that the ether-soluble, nonsaponifiable concentrate of cod-liver oil is as potent, gram for gram, as the oil from which it is made in preventing rickets. However, in order that the requirements for reproduction, as well as for growth, may be provided for, the diet should be so arranged as to furnish an excess of vitamins. This may be readily accomplished by the use of the cod-liver oil concentrate, since it furnishes the necessary fat soluble vitamins without interference with the balance between fats, proteins and carbohydrates.—Harry E. Dubin, *Am. J. Dis. Child.,* July, 1925.

Law to Aid Subnormal Children—The Pennsylvania Assembly, at its last session, passed the Lanius bills, which amended section 1413 of the school code. The new measures require that all children of school age having physical or mental handicaps shall be cared for in special classes, and where there are not enough such children in a school district to warrant the establishment of a special class of at least 10 children, the handicapped children must be sent to approved classes or institutions outside the district, unless their parents procure for them proper instruction at home or elsewhere. When children are taught in special classes or institutions outside the district, the cost of tuition is divided, 25 per cent to be paid by the district of their residence, and 75 per cent by the commonwealth.—*Jour. A. M. A.,* Sept. 5, 1925.

Reduction of Ante-Natal, Neo-Natal and Post-Natal Mortality—The First General Congress on Child Welfare passed at the Plenary Session, held on Friday, August 28, 1925, the following resolutions.

The following are the most appropriate measures to ensure a reduction in stillbirths and in infant mortality and morbidity:

I. There should be a wide extension of general instruction in puericulture and in all that relates to the hygiene of children and adolescents. Such instruction should be given to all classes and to persons of all ages. It should include:

(a) Progressive courses adapted to the various grades of public education, elementary, secondary and higher, and provision, in particular, for the foundation of chairs of puericulture in universities;
(b) An increased number of social service centers and information bureaux, calculated to ensure the development of preconceptional hygiene, and to instruct future mothers, more particularly by means of ante-natal clinics, in the laws of ante-natal health and of lactation;
(c) The development of the system of infant consultations on a scientific basis.

II. The normal development of the child can only take place under the care of its mother. In this connection it is important to observe the following rules:

(a) The aim of child welfare work should be to keep the child in its own home, and to secure breast-feeding unless medical advice is opposed to such a course.
(b) This method depends for its proper application on a constant increase in the staff of specially trained workers, such as doctors, midwives and visiting nurses.
(c) Every nursing mother should be placed in such an economic condition as is essential to the discharge of her maternal functions.

III. In every country it is highly desirable to apply the recognized methods of determining the causes of infant mortality, such as alcoholism of the parents, venereal disease, character of employment, social and housing conditions, and also, to encourage the study of prophylactic means in regard to contagious disease, unhygienic surroundings, etc., and, in particular, of the home care of tuberculous children by giving them the benefit of the open air in a healthy environment.

IV. It is the duty of public authorities to ensure that the supply of milk for infant-feeding shall be adequate both in quantity and quality, and with this end in view, to organize legal supervision over the milk industry.—*The Save the Children Fund International Union,* Sept. 10, 1925.

Variability in Weight for Height in Children of School Age—Based on the study of a group of 60,000 San Francisco school children, Faber arrived at some very interesting conclusions regarding the use of height and weight as a measure of the nutrition of the child. Because of the skewness of the curves of the distribution of children according to weight,

the two sides of the curve were dealt with separately in computing constancy of variability by a statistically permissible plan worked out by him. He points out that the coefficients of variability derived by this special method are directly comparable to the percentage underweight or overweight for height, and that if they are the same for every age then the single 10 per cent standard now commonly employed would be workable, but that if this variability changes with age, it would indicate the necessity for a sliding scale for different ages in estimating nutrition.

He found that the variability in the groups of underweight and overweight sides of the curves from the modal point increases with age, the variability on the underweight side for boys being from 20 to 25 per cent greater at 12 to 14 years of age than at 6 years of age, and among girls from 40 to 45 per cent greater. On the overweight side the variability is even greater.

On comparing the boys and girls, it was found that the variation on the underweight side in weight for height of girls is greater than for boys at every age from 7 to 14 years, and on the overweight side it is also greater among girls at every age included in this study —5 to 14 years. For this reason, in the language of the author, "It appears then that the proper use of height weight tables should require the use of two sliding scales of percentage allowance of underweight and overweight, one for boys and one for girls."

There is, of course, no reason to think that a purely statistical concept such as the coefficient of variability will give any indication of the limits of "normality" in the clinical sense. However, it is stated that "The proportion of all cases to be included can be made the basis for the selection of standards of 'normal' variation, but in any case these would be directly proportional to the coefficients of variation." With this idea in mind limits have been set which will on the average class 10 per cent of each sex and age as underweight. The final sliding scale of underweight proposed ranges from 7 to 9 per cent for boys and from 7 to 10 per cent for girls. The overweight scales range from 9 to 12 per cent for boys and from 9 to 17 per cent for girls.—Harold K. Faber, *Am. J. Dis. Child.*, Sept., 1925.

A Measles Skin Reaction—In 1905 Hecktoen, of Chicago, showed that the virus of measles may be present in the blood; and in 1911 Anderson and Goldberger found the Rhesus monkey susceptible to inoculation with measles materials collected just before or early in the eruptive stage, and that the virus passed through a Berkefeld filter.

In 1917, in an article published in the *Journal of the A. M. A.*, and in later articles published elsewhere, the author described a small Gram-positive diplococcus isolated from the blood, eyes, nose, throat and sputum of patients with measles during the preëruptive and early eruptive stages that, when first isolated, generally passed through a tested Berkefeld N. filter. Rabbits immunized with this coccus were found to acquire special opsonic and agglutinating power not only for the strains used in immunization but for other strains of the measles diplococcus. Furthermore, the same symptoms and lesions as are produced by the inoculation of washings of the nose and throat of patients with measles were observed to follow inoculation of the measles diplococcus in monkeys, guinea pigs and rabbits. Rabbits successfully inoculated with the diplococcus showed no symptoms when reinoculated with fresh measles material.

At the height of the attack of measles, Gram-positive bacilli and other organisms were sometimes isolated from the blood, but as they were not found in the preëruptive stage, when the blood is known to be infective, and as no opsonins, agglutinins or complement fixing bodies could be demonstrated for them, they were not considered to be of any etiologic significance.

A study of the skin reaction to this diplococcus showed that anaerobic dextrose broth cultures of the green-producing diplococcus found in measles killed by 0.5 per cent carbolic acid, appear to produce a skin reaction in persons who have not had measles, but not in measles patients after the appearance of the eruption, or in 96 per cent of persons who give a history of measles. This and other results obtained in the course of this study indicate that the Gram-positive, green-producing diplococcus found in measles is of etiologic significance.—Ruth Tunnicliff, *J. Infect. Dis.*, Sept., 1925.

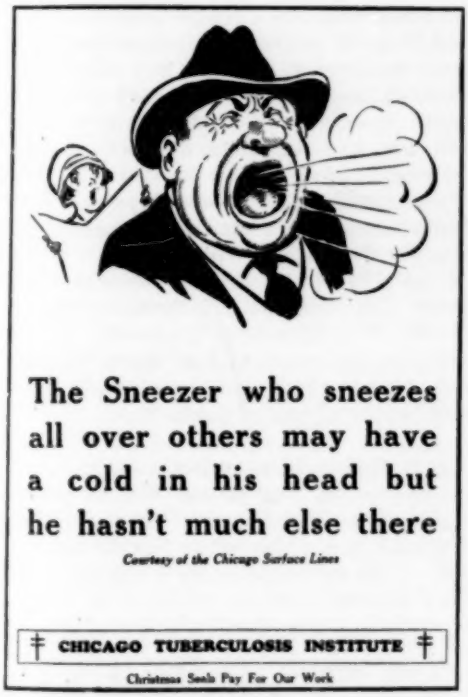
EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

An All Year Round Clinic—Everything contained in the Education and Publicity department of the JOURNAL is subject to criticism—and readers are earnestly invited to say what they think of the materials and the suggestions which appear from month to month.

From time to time we wish to submit for special examination specimens of printed matter, ideas and plans.

DECEMBER CLINIC


The Sneezer who sneezes all over others may have a cold in his head but he hasn't much else there
Courtesy of the Chicago Surface Lines
CHICAGO TUBERCULOSIS INSTITUTE
Christmas Seals Pay For Our Work

What do you think of this poster (14 by 21 inches)?

Is the "art" one of the kinds that our "average Americans" like when they don't wish to take a subject too seriously?

Have "comic strips" accustomed us to such blunt statements as that in the text?

What would you offer as a substitute?

DATES AHEAD

Conclusion of school holidays.

Jan. 1—New Year's Day.

Jan. 1—Paul Revere's birthday.

Jan. 2—150th anniversary of the raising of the first American flag at Cambridge, Mass.

Jan. 3-9—Week of Prayer for the Churches. Doctors and nurses are specifically mentioned in the call for prayer under "Missions," the Thursday night topic. Possibly the work you are doing can be mentioned in some churches that night.

Jan. 17—Benjamin Franklin's birthday. The multitudinous activities of this amazing man may well yield some phase as a basis for some activity on this day.

Jan. 17-23—Thrift Week—National Council of Y. M. C. A., 347 Madison Ave., New York, or the local Y. M. C. A., will supply campaign material or methods for utilizing the week—either for the benefit of your staff members or of your clients.

Jan. 19—Robert E. Lee's birthday.

Jan. 29—William McKinley's birthday. You may wish to avoid local celebrations of either of these days, or may see some opportunity for sharing in them.

Jan. 31—Child Labor Sunday—National Child Labor Committee, 215 Fourth Ave., New York, will supply material for conference sessions or public meetings.

P.R. (Please Report) how you made use of any of the "Dates Ahead" during the preceding months.

FOLKS WE KNOW

Dwight S. Anderson is publicity assistant on the staff of the National Tuberculosis Association. The appointment came some months ago, but we failed to present him at the time.

Ella Cyrene Bakke, formerly publicity secretary of the Colorado Tuberculosis Association, is now executive secretary.

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

J. Clarence Funk is now editor of *The Listening Post*, Pennsylvania State Department of Health.

Walter Greenough, publicity director of the Marion County Tuberculosis Association, Indianapolis, won the first prize of $50 offered by the National Tuberculosis Association for the best mail sale letter for the Seal Sale. Mr. Greenough is secretary of the Indiana Literary League and contributor to leading magazines.

Robert Kelso of Boston has been appointed chairman of the new Division of Educational Publicity of the National Conference of Social Work.

Mary Swain Routzahn of New York is secretary, with T. J. Edmonds, Iowa Tuberculosis Association, and P. P. Jacobs, National Tuberculosis Association, members of the committee.

Charles Miner, Missouri Social Hygiene Association, is chairman of the St. Louis Committee on Publicity Methods.

Bernard C. Roloff, Illinois Social Hygiene League, is chairman, and Jane Hufford, Chicago Tuberculosis Institute, is secretary of the Committee on Publicity Methods of the Chicago Council of Social Agencies.

James A. Tobey, Institute for Government Research, Washington, has prepared a monograph on the Children's Bureau which is published by Johns Hopkins Press.

Lee A. White, *Detroit News*, known for his helpful participation in the Detroit A.P.H.A. program, was on the programs of the Mississippi Valley Conference on Tuberculosis and the convention of the Ohio Public Health Association.

P.C.A. (Please Come Across) with news of appointments and new activities of those doing publicity-educational work.

STATE AND LOCAL BULLETINS

Alameda County Public Health News, Public Health Center of Alameda County, Oakland, Calif., is publishing a series of "health education projects" as worked out in the local public schools.

Bulletin, Ohio Public Health Association, carried a full page reproduction of the double-barred cross in outline, within which were framed a number of baby heads—three across each bar, and six on the upright bar. The page was headed: "Saving Babies' Lives in Ohio—Here ranged on the Double-barred Cross, the emblem of the Tuberculosis Movement, are some babies who reached their first birthday in safety."

Bulletin, Tuberculosis Society of Detroit and Wayne County, is so labelled only after the first page. This front page, with a new illustration and text every month, has the appearance of an illustrated folder.

Health Bulletin, North Carolina State Board of Health, for September, 1925, was in the form of a 32-page "Manual of Health for School Teachers and Public Schools."

Health Crusade Shield, Tuberculosis Society of St. Louis, devotes nearly half of every issue to contributions from school children in considerable variety of form.

Hoosier Health Herald, Indiana Tuberculosis Association (Indianapolis), carries a list of educational supplies on the last page.

Modern Health Crusader, Vermont Tuberculosis Association, frequently contains a picture about which the Crusader readers are invited to write stories. A selection from the stories submitted is published in a later issue.

Monthly Bulletin, of San Francisco Tuberculosis Association, devoted the April–May, 1925, issue to "The Health of the Chinese in San Francisco."

Ohio Health News, State Department of Health, comes twice a month in a 4-page form quite like that of New York state.

Porto Rico Health Review, Department of Health (San Juan, P. R.), is the newest official bulletin. It is attractively illustrated.

Sanitary Bulletin, Cincinnati Health Department, has come back after a two years' retirement because of lack of funds.

Be at Buffalo Monday Night—This is the first call for the "first annual" dinner business session of the Education and Publicity Section of the A.P.H.A. which will be held the opening night of the meeting at Buffalo next October. The "business" will not all be of a routine nature!

"Open Window" Campaign—November, the "open window" month with tuberculosis associations, is past, but the campaign idea is timely for December, or any winter period, in all communities where the idea was not pushed vigorously last month. Apply to the state or to the National Tuberculosis Association for (1) an open window campaign manual, (2) educational posters, (3) a four-page folder by C.-E. A. Winslow, and (4) a two-page leaflet.

Instruction for Tuberculosis Workers—The first of 5 regional institutes for tuberculosis workers will be held in New York City—intended especially for those coming from New Jersey, New York and New England—January 4-22, 1926. Other institutes will be held at Baltimore, Memphis, Portland, and some middle western city. Address the National Tuberculosis Association, 370 Seventh Ave., New York, N. Y.

A Help for Speakers—A war time device of one War Savings district was a set of cards for speakers. These cards were substituted for the cumbersome leaflets and pamphlets usually supplied for the information of speakers. The Indianapolis Community Fund has recently adopted the idea for its speakers' bureau. Samples of both sets will be loaned upon request to the editor.

Advertisements Addressed to Santa Claus—A newspaper in Waupun, Wis., according to *Editor and Publisher,* ran a full page of ads in the form of letters to Santa Claus. May not health and other social agencies make use of the same idea—as a news story, a leaflet, a letter, or an advertisement—to offer service, particularly where a definite sum is needed to cover that service, or to express other needs in your work which might be met by gifts at the holiday season?

Poster Contest in Indiana—A state poster contest sponsored by the Indiana Parent-Teacher Association and the Bureau of Visual Instruction of Indiana University Extension Division, includes Health and Recreation among the three main groups. Such a state competition may be possible elsewhere. Probably the Extension Division, if addressed at Bloomington, will send you an outline of the plan.

One Way to Aid the Christmas Seal Sale—Last year a Christmas seal committee received this letter: "You ask me to buy 100 seals and put them on letters and post cards, yet your letter to me failed to bear one. In this connection, I prefer to do as you do rather than as you say." A "moral" to the interested public health worker seems needless.

Fun for Health Workers—For delicious fun, "horrifying the American Health Worker," see the program of the "Follies" put on by the Relief Fund of Tuberculosis Secretaries at the recent convention of the National Tuberculosis Association. A copy for 25 cents through Miss Jessamine S. Whitney, 370 Seventh Avenue, New York, N. Y.

Children, Wash Your Hands!—"Dr. John J. Sippy, Health Officer of the San Joaquin Health District, Stockton, is placing posters worded as follows in school toilets throughout his district:

DO YOU ALWAYS REMEMBER TO
WASH YOUR HANDS
BEFORE LEAVING THE TOILET?
IT IS GOOD MANNERS TO BE CLEAN

In school lunch rooms, Dr. Sippy is placing posters worded as follows:

HAVE YOU WASHED YOUR
HANDS BEFORE EATING?
GOOD MANNERS AND GOOD
HEALTH REQUIRE THAT YOU DO."

—*Weekly Bulletin,* Calif. State Board of Health. Oct. 10, 1925.

A New Goiter Leaflet—A simple, readable leaflet, "A Word to the Wise About Goiter Prevention," is being issued jointly by the Board of Health, Board of Education and Public Health Federation of Cincinnati. Its purpose is to secure the use of iodized salt as a preventive.

Libraries Encourage Sex Education—"Recently, the Division of Social Hygiene offered to coöperate with local libraries throughout the state in giving publicity to available books on sex hygiene. A considerable number of libraries have made up a special mailing list of the names of parents and young people to whom this information should be sent. The Division of Social Hygiene has mailed letters to these people to stimulate their interest and has enclosed a bibliography of such books available in their respective libraries and of other literature distributed by the State Department of Health."—*Health News,* New York State Health Department. Oct. 19, 1925.

What the Small Town Editor Wants—"Newspapers are sometimes placed in the wrong light. The average newspaper, especially in the small town, has a limited editorial force, and the organizations which get the most publicity are the ones which furnish the copy in presentable and finished form.

"When it is left to the newspaper man to write his own story, the news is received more reluctantly and the result is not always as effective as if the Red Cross worker had furnished a finished article or a good outline on which to build a story."—By Carl L. Houston. *Red Cross Courier*. Nov. 1, 1925, p. 12. (American Red Cross, Washington, D. C.)

A Prize Winning Play—"The prize winning health play 'Clean-Up' which was produced at Minneapolis in June and won the $100 offered by the Child Health Education Service of the National Tuberculosis Association has been printed with words and music. The price is 10 cents a single copy; 8 cents a copy in lots of over 50 and less than 100; 6 cents a copy in lots of 100 and over. The play that won the second prize 'Rummy Reforms,' and 'Flies' (one of the honorable mention plays) have also been printed and are for sale at the same prices. 'Plays and Pageantry,' the list of 25 health plays recommended by the National Health Council, has been revised and includes these 3 plays. A contest will be held throughout high schools again this year and a revised manual on playwriting is ready."—*Monthly Digest*, National Health Council. Oct., 1925.

"Keeping Fit Essay Contests"—"The State Department of Education coöperating with the Bureau of Social Hygiene, State Board of Health, Mississippi, have issued the first year books on the girls' and the boys' keeping fit essay contests for the year 1924. Each pamphlet contains the 4 best essays and announcement of the next contest for 1925–1926. These contests have been put on since 1923–1924 in an effort to solve the problem in Mississippi of presenting the sex message in the high schools. The writing of these themes is made a part of the English course and the contest lasts from the opening of school in the fall until April 15. The essays must be less than 1,000 words and must be in the hands of the State Superintendent of Education not later than May first."—*J. Soc. Hyg.*, 11:427 (Oct.), 1925. (370 Seventh Ave., New York, N. Y. 35c.)

Education and Publicity Headquarters at St. Louis—More than ever, as it seemed, was the display of publicity materials of many kinds at the headquarters conducted by the Education and Publicity Section valued by numerous delegates. Plans are already under way for increasing the usefulness of the headquarters at Buffalo.

Posters and placards from many lands, displayed in 3 of the meeting halls, were particularly impressive because the poster art of Europe is so superior to that used in the United States and Canada, and that of European, Asiatic and South American countries is more colorful. The extreme simplicity and directness of the information and the suggestions on the posters from the Red Cross of India offered a striking lesson in avoiding generalizations. The posters were obtained through the League of Red Cross Societies and several other agencies.

For Professional Inspiration—Public health workers may draw directly upon literature and the arts for mental and spiritual refreshment, but it is good to have brought together some of the thoughts of writers and artists which bear directly upon the day's work of those whose major interest is some phase of health. Such a collection is made annually for nurses in the form of a calendar prepared by the National League of Nursing Education, 370 Seventh Avenue, New York, N. Y.

"The Nurse in Poetry," the 1926 calendar expressing nursing in many moods, will be of "exceptional interest to all student and graduate nurses and others in sympathy with nursing." The League will supply the calendar at $1.00 a copy, 75 cents a copy in orders of 50 or more.

Making Your Telephone Number Known—Watch for telephone calls for information or help which reach your office, or the clinic or health center, which may be made the basis of a brief story in which you will bring out that "Main 7411," or whatever it may be, is the number to call when any one wishes the kind of information or service you have to offer. Put this in your date book or file to run at least once in 12 months.

Has any one ever used the want ad columns of a newspaper for advertising service and information?

Prize for Naming a Motion Picture—"Arrested," won the $25 prize offered by the Hennepin County (Minn.) Tuberculosis Association for a name for a picture featuring Glen Lake Sanatorium. The second prize was won by "Well, Why Not?"

And **That Was St. Louis!**—There were no papers or addresses in the Education and Publicity Section meetings at St. Louis, but the stenographic record of the main sessions will make it possible to have satisfactory reports in early issues of the JOURNAL.

The luncheon session on motives that bring action was too popular, with an attendance of more than 200. An interesting and helpful innovation was the presence of two "discussion consultants," psychologists of high standing, who did not make addresses, but took part briefly as they were called upon to answer questions, or when they wished to contribute a suggestion or an opinion.

A roll of film slides, 18 in number, was used to illustrate motives appealed to in getting people to take health examinations, such as the desire to live longer, and the appeal to common sense in treating the human body as well as you would an automobile. The film will be loaned for use in conducting a conference in any national, state or local gathering. With or without accompanying samples of printed matter this set of pictures is well worth a two-hours' session for a frank, discriminating discussion of what should be said to induce people to be examined. The film was made especially for use on the Picturol, but can be used equally well on the Spencer and Brayco machines. The film will be loaned free by the secretary of the section.

The several small sessions on highly specialized topics encouraged the plan for having such gatherings made a part of the announced program at Buffalo.

70+—"'The days of our years are three score and ten'; so wrote King David of old and even today the 70th milestone is regarded as marking the end of the road, but the Psalmist added that 'by reason of strength,' mark well the words, there might be a still further extension. . . ."

"Universal health examinations mean that instead of the limit of life being three score and ten, it will be 70+. Let us work for 70+, and let it be our sign. When you mail a letter put the 70+ sign on its back that all may see. People who do not know what it means, will inquire about it; to those who do know, it will be a reminder. Let us spread the gospel of the 70+ far and wide and in every way possible that humanity may profit and the world be richer."

Dr. William C. Miller thus explains the large "70+" which appears on the mailing envelopes of *The Listening Post*, issued monthly by the Pennsylvania Dept. of Health.

Hospital Photographs Wanted — "The Smithsonian Institution has invited the American Hospital Association to provide a permanent exhibition of hospital activities. . . ."

"It is proposed to have a series of transparent photographs illustrating the many forms of hospital work, practically a moving picture scenario, which shall move the spectator to an interest in and appreciation of the value of hospital work. Few people, including even the physicians on hospital staffs, appreciate the multitudinous details necessary for efficient hospital service; and the plan is, by the series of pictures to illustrate the preparation of the plant and personnel for the reception of the patient, sources from which the patient is received, the reception at the hospital, methods of diagnosis, methods of treatment, methods of housekeeping care and service, including social service and physiotherapy, resulting in the return to health and efficient citizenship." Then follows detailed suggestions of desirable pictures.—*Daily* (Convention) *Bulletin*, American Hospital Association, 22 East Ontario Street, Chicago, Oct. 23, 1925.

Letters to Milk Producers—A series of monthly form letters is addressed to "Mr. Milk Producer" by Howard R. Estes, dairy and food inspector of the Flint, Michigan, Board of Health. The letters contain suggestions, reprimands and warnings—all written in a readable style and friendly manner. One letter discusses odors in milk, another the handling of "nights milk," etc. One letter opens with "Has it ever occurred to you that milking was not merely a chore but was really one of the most important duties which you perform on the farm?" The letter for September, 1925, is numbered 94 in the series!

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

Last month there was little, if any material on law and legislation, as applied to public health. Since then, however, a veritable plethora of material on this subject has come to light, so much so, in fact, that space permits comment this month on only part of it.

Operation of the Maternity and Infancy Act—Forty-three states are now coöperating under the Federal Act for the Promotion of the Welfare and Hygiene of Maternity and Infancy, Vermont, Louisiana and Rhode Island having come into the fold in 1925. Connecticut, Illinois, Kansas, Maine and Massachusetts still hold aloof. A 56-page report on the operation of the act during the fiscal year ending June 30, 1924, has recently been issued by the United States Children's Bureau, which is charged with the administration of the law. According to an accompanying press release from the bureau, nearly 600,000 infants and preschool children have been examined at 26,353 child health conferences during the year.

In addition to the examination of babies and young children at the child health conferences, maternity and infancy activities during 1924 and 1925 included the holding of 9,669 prenatal conferences attended by approximately 75,000 women; classes for midwives with a total attendance of approximately 40,000; the holding of mothers' classes with an attendance of more than 162,000 mothers; and the organization of over 5,000 "little mothers" classes. The number of child health centers established was 1,706; the number of prenatal centers, 245.

Other important activities under the Act include home visits by nurses in sparsely settled country where health conferences are not possible, nutrition work for expectant mothers and for children, efforts to make good confinement and postnatal care possible for mothers, inspection of maternity and infant homes, improvement of birth registration, the distribution of silver-nitrate solution to prevent ophthalmia neonatorum, anti-diphtheria campaigns, campaigns to have all preschool children examined before school entrance and general educational work.

The Children's Bureau also reports as to the cost of the Act and the total appropriations, national and state, spent in accordance with its provisions. The Act authorizes $1,240,000 annually for 5 years (the five-year period ends June 30, 1927), $50,000 of which may be spent by the Children's Bureau for administrative and investigating purposes. From 1924 appropriations the states accepted $918,280, from 1925 funds (up to October 1, 1925), $949,827. During the fiscal year 1924, the Children's Bureau spent for administrative and investigating purposes, $35,578; during 1925, $42,972. Estimates on a per capita basis show that federal appropriations for maternity and infancy work cost annually less than 1 cent per inhabitant of the United States.

The chief of the bureau, Miss Grace Abbott, points out that Census Bureau data show a reduction in infant mortality, but that the United States is still behind many other nations. She stresses the importance of efforts for better care at childbirth and states that an expansion of this work can economically be undertaken.

Stream Pollution—Every riparian owner has the right to have a stream come to him in its natural state of purity, though owners above him may make a reasonable use of the stream. The pollution of the water, so as to cause a nuisance, is not a reasonable use of it. Furthermore, a municipal corporation is in no better position in this regard than is an individual or private corporation and will be liable for stream pollution. These are all well settled legal principles, based on the common law and the decisions of many American courts.

A review of an important court decision on stream pollution is given at some length in *Engineering News-Record* for September 3, 1925. It is a description of the case of Mitchell Realty Company v. West Allis, 199 N. W. 390, decided by the Wisconsin Supreme Court in

June, 1924. This case was mentioned by us exactly a year ago in the December, 1924, issue of the JOURNAL (page 1093). The city had been discharging quantities of sewage into a creek to the detriment of land used for celery farms lower down, and also of playground and park areas of the city of Milwaukee. The court awarded $50,000 damages to the land company and also enjoined the offending municipality from further polluting the stream, allowing abatement to be consummated within 60 days. In commenting on this case, the writer in the *Engineering News-Record*, William R. Copeland, says:

"The court seemed to focus upon three main features: (1) That a municipality, although consisting of many thousands of individuals, does not have the right to pollute a natural watercourse to the detriment of lower riparian owners. (2) That if it becomes necessary for a municipality or corporation to make use of a natural watercourse to carry away its sewage the public right demands that the sewage must be purified, at no matter what cost to the producer, to a degree such that it will cause no injury to lower riparian rights. (3) That when the public interest becomes involved the matter resolves itself into a question of equity primarily, although damages may be brought in as an adjunct. Decisions of this sort point clearly to the necessity in the future of educating municipalities to provide adequate sewage purification in order to protect them against the assessments of expensive damages."

A county judge in New York has recently awarded damages of $1,000 and permanently enjoined an industrial concern from polluting a stream with factory wastes, according to the *Health News* of New York for October 19, 1925. This decision, not being by a court of last resort, may be appealed, but in all probability will be sustained by the higher court, as the principle is legally sound.

Injunction against Schick Test—Out in Fargo, North Dakota, where one of the Child Health Demonstrations is under way, a county judge granted a temporary injunction on October 15, 1925, restraining the administration of the Schick test by the Board of Education, the Child Health Demonstration, and the Lutheran Children's Home. The injunction was made returnable on November 9, which is after the JOURNAL goes to press, so that the outcome cannot be reported until next month. As is often the case, this action was inspired by members of the chiropractic cult and was evidently chiefly induced by a desire for publicity. The bill and affidavit are weird affairs, full of misstatements and falsifications, as would be expected. Whatever the judge actually decided eventually, he should have denied the request for a permanent injunction, and the wonder is that he even granted a temporary one, for it is a rule of law that courts will hesitate to restrain the actions of health authorities unless there are very well-founded grounds for believing the existence of fraud or oppression. If the health authorities, in answering the bill, produce competent professional testimony to uphold the efficacy of the test, the judge must accept this and dismiss the injunction. Since this court is an inferior one, there is the right of appeal, on legal grounds, if the decision is adverse to public health.

Other Court Decisions—Current court decisions are abstracted in *Public Health Reports* for October 16, 1925, and October 23, 1925. Three of these deal with the writ of mandamus, an action with which sanitarians should be familiar. Mandamus is a command in the name of the state, directed by a court of record to some tribunal, corporation, public board or officer, requiring the performance of an act which, in the opinion of the court, it was the duty of the board or other body to do. In two of the cases cited, State ex rel Ratner v. Minneapolis (Minn.), 204 N. W. 632; and Cohen v. Thompson (N. J.), 129 Atl. 700, mandamus was asked to compel the issuance of licenses to sell food, the licenses having been refused by the health authorities. In the Minnesota case, the local zoning ordinance was also a reason for refusal. In each case the court refused to issue the mandamus and upheld the action of the health officials for the reasons which they presented in support of their action. The third case of mandamus occurred in Louisiana, State ex rel Schoeffner v. Dowling, 104 So. 624, where the court refused to order the state health officer to appoint a parish board of health for Orleans, saying that such an order should come from the proper state officials and not the courts.

In Michigan the sterilization law of 1923, except for one section, has been upheld in the case of Smith v. Command, 204 N. W. 140. This decision will be reviewed in this department at greater length next month.

In Kansas it has been held in State ex rel Griffith v. Conner, 237 Pac. 385, that where venereally infected girls and women were sent by health authorities from a county to the state quarantine hospital, the county is liable for the expenses of returning such patients from the hospital to their homes. In the same state, a city dairy inspector has been held to be an expert employe and not an officer, so that a nonresident could be appointed, under the operation of civil service, to the position. Bassler v. Gordon, 237 Pac. 907.

Mental Hygiene—A tentative program of coöperation between psychiatrists and lawyers is given by S. Sheldon Glueck, Ph.D., LL.M., in *Mental Hygiene* for October, 1925. This will be reviewed later.

A former inmate of an insane asylum (so-called), who committed crime in New Jersey, has been held sane and must be tried, according to the *New York Times* of October 9, 1925. This is the Noel case and there seems little doubt in the mind of anyone that the prisoner is mentally disordered. To be held responsible for a crime, the accused must be capable of exercising the intent to commit it, and have the power of choice over his actions at the time. In a mentally disordered mind this is not possible as a rule. Yet the sovereign State of New Jersey, through the Court of Common Pleas of Essex County, held that this mentally disordered individual must answer for his crime in a trial before a court. This is archaic procedure. The place for this boy is in an institution, not a court. In giving his opinion, the judge said, "A careful reading of the testimony, aided by my own observation and conversation with the defendant, and not being unmindful that the physicians both for the state and the defense are of the opinion that the defendant is suffering from some form of mental deterioration at this time, leads me to the conclusion that the defendant's appreciation of his predicament is apparent and that he comprehends his position with relation to the crime charged against him." Is the learned judge a psychiatrist, then?

The Government Hospital for the Insane, known as St. Elizabeth's, has recently come in for some scathing comment by the Grand Jury of the District of Columbia, where the institution is located. This federal grand jury has recommended that Congress authorize the President to appoint a committee to investigate the hospital, as the grand jury believes that many persons who are inmates are not insane, but were sent there for ulterior motives. Lamentable conditions of overcrowding are also deplored. This latter complaint is probably less half-cocked than the former. The Secretary of the Interior, under whose jurisdiction the institution is, has vigorously denied the charges.

Congress to Convene—The Sixty-Ninth Congress convenes, according to law, on the first Monday in December, which is the 7th. As usual, an endeavor will be made to report in this department all matters of interest to sanitarians, which Congress may consider.

One important subject which will be before Congress will be that of the reorganization of the executive departments, including plans for the better coördination of federal health activities. The scheme which has been worked out will be presented in an early issue of the JOURNAL. At the convention of the Association in St. Louis, a resolution was passed, calling for the centralization of these health activities, with at least an assistant secretary in charge of them. The Veterans' Bureau should be kept out, according to this resolution; and it should, because more and more it is getting to be a fiscal agency, that is, one which is paying compensation, though it continues to give some relief. By no means is it a health agency.

Efforts will also be made to induce Congress to pass legislation granting a commissioned status to the sanitary engineers of the Public Health Service, a status which they deserve and should have.

More Patent Medicines—Whenever amusement is needed, it can be gained from perusal of a copy of the *Patent Office Gazette*, which lists new applications and grants of patents and trademarks. Patent medicines usually take out trademarks nowadays, instead of patents. In a recent edition of the *Gazette*, the following risible applications for trademarks were noted: bunion salve; catarrhal jelly; dog fit remedy; halitosis cure; headache preparation; "mineral substance employed in the treatment of rheumatism, goiter, malaria, Bright's disease, nervousness, weak stomach, female complaints, and torpid liver"; obesity cure; preventive ointment against the venereal diseases; pile remedy; pyorrhea cure; rat virus; scalp treatment; skin lotions; suppository used in treating diabetes; tuberculosis treatment; wound dressing; and a number of cosmetics and other

drugs. The only requirement for these trademarks is that they be unique and dissimilar from any others issued. The efficacy or lack of it of the remedy does not count.

Statistical Work of the Government—A 574-page book describing the statistical work of the United States Government has recently been issued by the Institute for Government Research, Washington, D. C. This excellent compendium was written by Dr. L. F. Schmeckebier, who also produced the notable monograph on the Public Health Service. Of special interest to sanitarians will be the chapters: on deaths, diseases, and accidents (IX); on births (VIII); on dependents, defectives and delinquents (V); on marriage and divorce (X); and on women and children (XIV). This important treatise may be obtained through the book department of the Association.

CONVENTIONS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

December 15–17, Southern Surgical Association, Louisville, Ky.

December 18–19, Western Surgical Association, Wichita, Kansas.

December 28–30, American Society of Biological Chemists, Inc., Cleveland, O.

December 28–30, American Pharmacological Society, Cleveland, O.

December 28–30, American Physiological Society, Cleveland, O.

December 28–31, American Statistical Association, New York, N. Y.

December 28–January 2, 1926, American Association for the Advancement of Science, Kansas City, Mo.

December 29–30, American Student Health Association, New York, N. Y.

December 29–31, Federation of American Societies for Experimental Biology, Cleveland, O.

December 29–31, American Association for Labor Legislation, New York, N. Y.

December 29–31, Society of American Bacteriologists, Madison, Wis.

The Prevention and Treatment of Lock Jaw (Tetanus)

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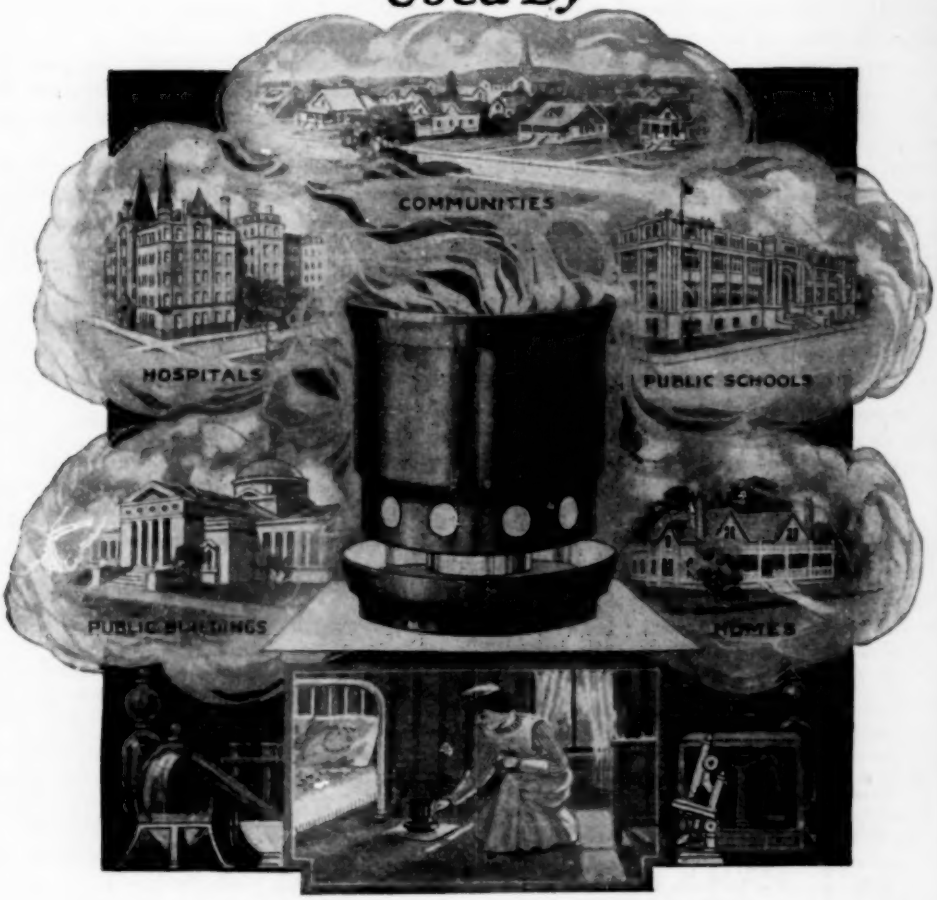

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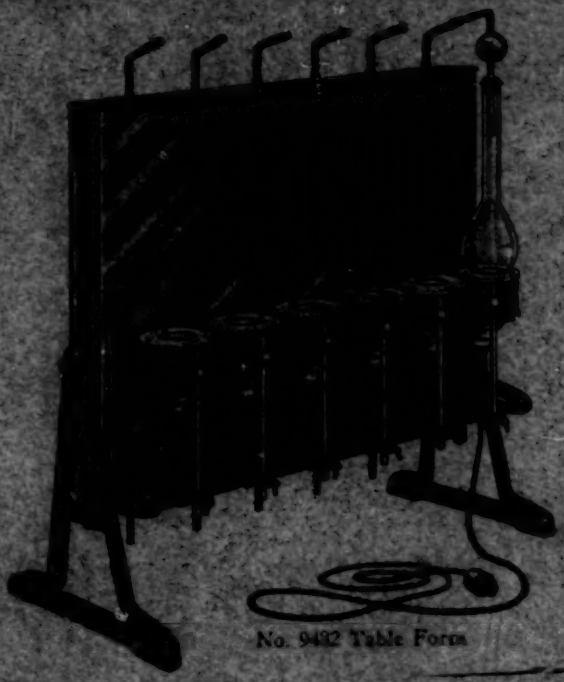

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